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THE  
ILLUSTRATED ANNUAL  
REGISTER OF RURAL AFFAIRS  
AND  
CULTIVATOR ALMANAC,  
FOR THE YEAR 1859,

CONTAINING PRACTICAL  
SUGGESTIONS FOR THE FARMER AND HORTICULTURIST,  
EMBELLISHED WITH ONE HUNDRED AND FORTY ENGRAVINGS,  
INCLUDING HOUSES, FARM BUILDINGS, IMPLEMENTS,  
FRUITS, FLOWERS, &c.

---

BY J. J. THOMAS,  
AUTHOR OF THE "AMERICAN FRUIT CULTURIST," AND "FARM IMPLEMENTS,"  
ASSOCIATE EDITOR OF THE "COUNTRY GENTLEMAN" AND "CULTIVATOR."

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ALBANY, N. Y.:  
LUTHER TUCKER & SON, 397 BROADWAY.

NEW-YORK: A. O. MOORE, 140 FULTON ST.

1859.

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## PUBLISHERS' ADVERTISEMENT.

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WITH the design and character of the ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS, many who read these pages are already familiar. It has been four years before the public—the present constituting the Fifth of its annual Numbers, and the encouragement extended to it, and the universal approval with which its contents and purposes have been honored, are such that increased expenditure on the part of the Publishers, and increased labor on the part of the Editor, have been induced, with a view both to render the work intrinsically as useful as possible, and to give it those features of attractiveness and interest calculated to command the widest circulation. It has been their hope to place it largely in the hands of those who have not before been readers of Agricultural and Horticultural publications, in order that it might further the conviction of the importance of such reading with all concerned in tilling the soil; that it might open the way for the more extended promulgation of reliable journals and books devoted to the subject; and by adding, if possible, to the profits, and increasing the pleasures of Rural Life, become a powerful though unpretending auxiliary in the cause of Rural Progress, as well as an authentic REGISTER OF RURAL IMPROVEMENT.

THE ANNUAL REGISTER is issued early in the autumn of each year, the contents of the successive Numbers being entirely new, and especially written for the purpose. Different chapters in different Numbers upon the same subjects, are in *continuation* and not in *repetition* of each other. An edition of the Numbers for the three years, 1855, 1856, and 1857, is for sale, printed on larger and very heavy paper, and bound in one handsome volume, with the omission of the Calendar pages and Advertisements, and the addition of a new Title Page and Index. It has met with a large demand in this form, and is unhesitatingly offered as the most comprehensive and attractive work of its size ever published on Rural Subjects. Its price is \$1, with a deduction to Agents and Agricultural Societies purchasing in quantities.

The whole five Numbers for 1855, '56, '57, '58, and '59, in paper covers as originally published, are also for sale, and will be sent to any address, postpaid, for \$1. A Second Volume will be issued another year, uniform with that mentioned above, to contain the Numbers of the REGISTER for 1858, 1859, and 1860. The work is now firmly established in popular favor, and its appearance may therefore be annually expected, it is hoped for many years to come.

F.A.M.P  
8-24-81



# INDEX OF NO. 5, FOR 1859.

	Page.		Page.
Animals, Choice of,.....	137	Iron Stands, Vases and Bedsteads, ..	156
Apple-Seed Washer,.....	204	157, 158	
Apples for Domestic Animals, .....	228	and Wire Fences,.....	159
Apple Trees, Productive, .....	228	Leap Year, .....	15
Brorsen's Comet, .....	20	Manures, Increase and Management	
Calendar Pages,.....	9 to 20	of, .....	138
Celery, Raising and Keeping, .....	203	Meteors, Periodical,.....	16
Chronological Cycles,.....	15	Nurseries in Canada,.....	215
Country Dwellings,.....	141	of the United States,.....	205
Customary Notes, .....	7	Principal, in Europe,.....	216
Day and Night, To Ascertain Length		Old and New Style,.....	9
of, .....	8	Orchards, Draining,.....	228
Earth, Heat of, .....	16	Peaches, Choice Selection of,.....	192
Eclipses for 1859,.....	8	Pear, Culture of the,.....	178
Equinoxes and Solstices,.....	8	Pears, Gathering and Keeping,.....	190
Farming, Capital Required for, .....	125	Marketing,.....	190
Good and Bad Contrasted, .....	125	Ripening in Succession,.....	189
Implements Necessary for,.....	131	Varieties most Liable to Fire	
Live Stock for,.....	131	Blight,.....	190
Order in, .....	129	Varieties of; Described,.....	181
Farm Management, Chapter on,.....	125	Varieties which do not Crack,....	190
Farm Operations in the Order of		Planets Discovered in 1857,.....	13
Time, .....	140	Plow, Hildreth's Gang,.....	225
Farms, Directions for Laying Out, ..	133	Plums, Select List of Described, ....	192
Fences for,.....	136	Poultry, Coops and Troughs for, ....	222
Gates for,.....	136	Fattening, .....	223
Size of, .....	132	Management of,.....	218
Fences, Wire and Iron, .....	159	Rotation of Crops,.....	139
Fruit Bottle, Yeoman's,.....	201	Saturn, Rings of,.....	15
Fruits, Hardy at the West,.....	198	Soils and their Management, .....	137
List of Apples, .....	199	Spots on the Sun, .....	18
List of Cherries,.....	200	Strawberries, Hooker's Seedling,....	197
List of Pears,.....	200	Peabody's, .....	197
List of Small, .....	200	Select Lists of, .....	198
Preserving Fresh,.....	201	Transplanting, .....	194
Protecting Young, .....	204	Wilson's Albany, .....	197
Fruit Trees, Renovating Old,.....	200	Street Trees, Care of, .....	225
Gardens, Compost for, .....	228	Tide Table, .....	7
Grafts, Time to Cut,.....	227	True Time, How to Find,.....	12
How to Keep, .....	227	Underdraining, Chapter on, .....	164
Grapes, Keeping through Winter,....	202	Cost of, .....	175
Gregorian Year, .....	9	Depth and Distances of Drains, ..	174
Horse Power, A Cheap one, .....	226	How to Fill Drains,.....	175
Houses—Brick Farm,.....	142	Laying Out Drains, .....	166
Brick Villa with Tower, .....	151	Leveling Instruments for,.....	172
Irregular Country,.....	146	Mode of Cutting Drains,.....	174
Small Octagon, .....	143	Size of Tile for,.....	171
Square Brick Country,.....	148	with Brush,.....	177
Two Small, .....	144	with Stone, .....	176
Implements, Choice of, .....	137	Veranda, Design for, .....	153
Iron Furniture and Structures,.....	153	Verbena, Culture of,.....	216
Chairs and Settees,.....	154, 155, 156	Work-Shops and Stormy Days, .....	223

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## ENGRAVINGS.

<i>No. Figures. Page.</i>	<i>No. Figures. Page.</i>
A. Frost & Co.'s Nursery, .... 1 201	Pear Culture,..... 2 180
Apple-Seed Washer,..... 1 204	Pears, Figures of,..... 17 181
Brick Farm House,..... 3 142	Plums, Figures of,..... 4 193
Brick Villa with Tower,..... 4 151	Poultry Coops and Troughs, .. 2 222
Drains, Brush,..... 2 177	House and Yards,..... 4 220
Laying Out, ..... 15 166	Renovating Old Trees,..... 1 200
Levels for,..... 3 173	Saul & Co.'s Nursery,..... 1 210
Stone, ..... 3 176	Sizes of Wire, ..... 4 163
Tile and Draining Tools,.. 6 174	Small Country House,..... 2 145
Ellwanger & Barry's Nursery, 4 207	Small House, ..... 3 144
Farmer Thrifty's Farming, ... 6 126	Small Octagon House,..... 3 143
Fence for Town and City Lots, 1 164	Square Brick Country House, .. 4 149
Hildreth's Gang Plow, ..... 1 226	Squire Slipshod's Farming,.... 8 125
Horse Powers,..... 2 226	Stawberries, Hooker, ..... 1 195
Iron and Wire Fences,..... 11 159	Peabody's, ..... 1 197
Bedstead and Crib,..... 2 157	Wilson's Albany, ..... 1 196
Chairs, ..... 7 154	Street Trees,..... 1 225
Settees,..... 3 155	The Verbena,..... 1 217
Stands and Vase, ..... 4 156	Thomas & Herendeen's Nurs'y, 1 209
Irregular Country House,.... 5 146	Veranda, Design for, ..... 1 153
Laying Out Farms,..... 3 134	Yeoman's Fruit Bottle,..... 2 201

## CONTENTS OF NO. 4, FOR 1858.

[It is thought proper to add a brief Abstract of the Contents of the previous Numbers of the ANNUAL REGISTER, for the information of persons who do not already possess them. Either No. 4, for 1858, or Complete Sets from 1855, may at any time be had by addressing the Publishers at Albany, N. Y.]

<p>A COMPLETE COUNTRY RESIDENCE—With Grounds and Out-Houses fully described, ..... 28 Engravings.</p> <p>THE APIARY—A Practical Treatise on Bees and Bee-Keeping, 10 Engravings.</p> <p>COUNTRY HOUSES—With Eleven Designs, fully accompanied by Plans, 28 Engr's.</p> <p>NOTES ON FRUITS—With Familiar Hints on their Culture; the Grape, Currant, Apple, Pear, Plum; Tools for Orchard Work, ..... 21 Engravings.</p> <p>LISTS OF THE BEST KINDS OF FRUITS.</p> <p>ANNUAL FLOWERS—With Descriptive Lists and Method of Culture, 8 Engr's.</p> <p>THE KITCHEN GARDEN—Hints for its</p>	<p>Management, and Lists of the Best Vegetables, ..... 3 Engravings.</p> <p>GARDEN STRUCTURES—The Vinery, Greenhouse, &amp;c., ..... 6 Engravings.</p> <p>FARM BUILDINGS—The Carriage-House, Barn, Granary, Wagon-House, &amp;c., 10 Engravings.</p> <p>AGRICULTURE—Various Facts and Hints in Tillage, Domestic Animals, 8 Engr's.</p> <p>FEEDING ANIMALS—RURAL ECONOMY—DOMESTIC ECONOMY—STEAMING FOOD—WEIGHT OF GRAIN—VETERINARY RECEIPTS—ROOT CROPS—CHEAP FENCES—VENTILATION—GOOD AND BAD MANAGEMENT, &amp;c., &amp;c., .... 14 Engravings.</p>
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## “RURAL AFFAIRS”—Volume One.

THE care with which the Contents of the successive numbers of the ANNUAL REGISTER OF RURAL AFFAIRS have been prepared, the expense laid out upon the Illustrations they contain, and the universal favor with which they have been greeted,—induce the Publishers to issue a new edition of the three numbers previous to 1858, in one volume, under the above simple and comprehensive title. The Calendar pages and Advertisements of each year, have been omitted, the quality of the paper greatly improved, and the whole subjected to careful revision. The New Volume is offered as the most comprehensive, attractive, and valuable work of its size that has yet appeared upon Rural subjects. It contains FOUR HUNDRED AND FORTY ILLUSTRATIONS, among which are the following :

Designs and Plans of Country Dwellings, .....	44 Engravings.
do. do. School Houses, .....	8 “
Out-Buildings — Barns ; Stables ; Carriage, Poultry, Dairy and Smoke Houses ; Piggery, &c., .....	36 “
Rustic Structures ; Rock Work, &c., .....	25 “
Laying Out the Grounds of Farms, Gardens, Orchards, &c., .....	35 “
Figures of the Best Fruits of all kinds, .....	71 “
Various Processes in the Care and Culture of Fruit, .....	77 “
Trees and Ornamental Plants, .....	20 “
Improved Implements and Machines, .....	63 “
Animals of Good Breeds, and Adjuncts in their Management, ...	28 “

The remainder include Engravings on miscellaneous matters connected with the Farm or Farm-House—illustrative of processes in the Dairy, Drying Fruits, Lightning Rods, Wind Mills, Injurious Insects, Packing Trees, Shocking Grain, &c., &c.

The subjects of the above Engravings will give some idea of the contents of the work itself—of which, however, a more complete, although a very much condensed summary, may be of interest :

### Country Dwellings.

Under this head we have Fifteen Designs accompanied with Plans, in many instances of several floors, and ranging in expensiveness from the Working Man's or Tenant Cottage, at a cost of \$200, to Gothic and Italian Structures of several thousands—including Farm and Village Residences, aiming rather at neatness and taste, than mere display—at convenience and comfort within, as well as an attractive exterior. Also General Rules for Building, and Remarks on the Art of Planning a House.

### Laying Out

A Farm, Garden or Orchard, in an economical way, is a very important matter. We have four Articles on Laying Out Farms, with two general Plans,—two on Grounds around Houses and Flower Gardens,—eight on different Modes of Planting, and the Trees and Shrubs to be employed.

### What Fruits to Choose.

Here we have Complete Descriptions of SIXTY-ONE Varieties of Apples, Summer, Fall and Winter, Sweet and Sour ; FIFTY-FOUR of Pears, Summer, Autumn and Winter ; TWENTY-EIGHT of Peaches ; Six of Nectarines ; FOUR of Apricots ; THIRTY-FOUR of Plums ; TWENTY-EIGHT of Cherries ; THIRTEEN of Strawberries ; and a Dozen of Native and Foreign Grapes. Also approved lists at still greater length, and smaller select lists for limited assortments.

### Domestic Animals.

Portraits of the Best Breeds of Improved Cattle, Horses, Sheep, Swine, &c. A valuable paper on Doctoring Sick Animals, with Rules and Remedies of a simple kind. Eight of the more frequently met with Diseases of Horses, nine of Cattle, seven of Sheep and four of Swine, are particularly referred to, and appropriate treatment recommended.

### **Fruit Culture.**

Under this we have in Twenty-two Articles, almost every subject of importance in the Management of an Orchard, thoroughly and clearly explained—including the treatment of nearly all the large and small Fruits, many of their Diseases and their worst Insect enemies, together with a large number of brief Notes, containing invaluable hints and suggestions.

### **Farm Buildings.**

Eight Plans for Barns, Carriage Houses and Stables, are here presented, with Designs also for Piggery, Poultry Houses, Ashery and Smoke House,—mode of Cistern-building, of putting up Lightning Rods, &c., &c.

### **Farm Implements.**

Here we have Twenty-three articles, embracing much serviceable information—including the best Mowing and Reaping Machines, Plows, Planters, &c., together with more or less about nearly all the Implements the Farmer uses; illustrated chapters on Wind Mills, Stump Machines, Steam Engines, and many other inventions of interest.

### **School Houses.**

A Chapter with several neat and tasteful Designs is devoted to this subject.

This work is issued in the best typographical style, containing over Three Hundred pages, muslin binding,—price \$1. Agents are wanted to sell it in all parts of the country, and the attention of Agricultural Societies, Post Masters, Booksellers, Storekeepers and others, is particularly requested to its attractiveness, interest and value, arising from the wide range of subjects treated, the conciseness and practical character of the articles, and the beauty and profusion of the accompanying Engravings. There is scarcely a village or post office at which a dozen would not meet with ready sale.

Single copies sent post-paid for One Dollar. Address orders, or inquiries for terms at wholesale, to

LUTHER TUCKER & SON,

ALBANY, N. Y.

*The same Publishers also Invite the*

ATTENTION OF ALL INTERESTED IN AGRICULTURE OR HORTICULTURE, TO

### **The Country Gentleman,**

A WEEKLY JOURNAL,

Exclusively devoted to every branch of Rural Art,—all the processes of the Farm and Garden,—all means of Progress, either for Agriculture or the Agriculturist, and aiming to take THE FIRST RANK IN EVERY DEPARTMENT within its appropriate sphere. Making two volumes a year, each of 416 large quarto pages, at the low price of \$2.

### **Butter and Cheese Making.**

The best modes and means are treated at considerable length, accompanied by Thirteen Engravings, including Designs for Dairy Houses.

### **Rustic Seats and Structures.**

On this subject many hints are presented, with Twenty-three Engravings, including Rock Work, Flower Stands, Summer Houses, &c., &c.

### **Rural Economy.**

Articles on Rotation of Crops, Improved Farm Management, Economy for Young Farmers, Facts for Farmers, Paints for Fences and Buildings, Satisfactory Farming, Sprouting in Wheat, Packing Trees and Plants, Presence of Mind, and many brief Notes, the fruits of the Author's experience and observation, may be grouped under this head.

### **Weights and Measures.**

Tables for reference are here given, including Length and Distance, Specific Gravities, Contents and Size of Cisterns, Velocity of Wind, &c.

### **Domestic Economy.**

A number of pages are devoted to valuable and well tested recipes for household use.

### **The Cultivator,**

A MONTHLY JOURNAL,

Which will enter upon its Twenty-fifth year, in 1858. It includes the more brief and practical articles that appear in the Weekly, and presents in each annual volume nearly double the amount of matter contained in any other similar work. It is offered at the low price of Fifty Cents, and Clubs are presented with the ANNUAL REGISTER.



# THE CULTIVATOR ALMANAC FOR 1859.

CALCULATED BY SAMUEL H. WRIGHT, DUNDEE, YATES CO., N. Y.

## CUSTOMARY NOTES.

VENUS will be morning star until September 27th, then evening star the rest of the year. MARS will be evening star until July 21st, then morning star the rest of the year. JUPITER will be evening star until June 25th, then morning star the rest of the year. SATURN will be morning star until January 29th, then evening star until August 8th, then morning star the rest of the year.

The SUN will be north of the Equator this tropical year 186 days, 10 hours, 50 minutes; and south of it 178 days, 19 hours, 1 minute; showing a difference of 7 days, 15 hours, 49 minutes, which is caused by a slower motion of the earth in its orbit, in the summer season, when near its aphelion.

MERCURY will be in a favorable position for visibility about March 30th, July 28th, and November 22d; at which time it will be in the west in the region of sunset during twilight; also about January 24th, May 22d, and September 16th, when it will be in the east during the morning twilight.

VENUS will be brightest on the 18th of January, being beautiful in the morning.

Good Friday comes on the 22d of April, and Easter Sunday, April 24th; Pentecost, June 12; Trinity Sunday, June 19th; Advent Sunday, November 27th.

## TIDE TABLE.

THE Calendar pages of this Almanac exhibit the time of high-water at New-York and Boston. To find the time of high-water at any of the following places, *add to*, or *subtract* from, the time of high-water at New-York, as below. (There is a great deal of uncertainty about the tides, in consequence of the direction and *strength* of the winds.)

	H. M.		H. M.		H. M.
Albany, .....	add 6 34	Machias, .....	add 1 54	Portland, .....	add 3 12
Amboy, .....	sub. 0 39	Marblehead, ....	add 1 49	Portsmouth, ....	add 3 10
Annapolis, Md., ..	add 8 25	New-Bedford, ..	sub. 0 16	Providence, ....	sub 0 41
Annapolis, N. S.,	add 1 49	New-Haven, ....	add 3 3	Richmond, .....	add 8 15
Baltimore, .....	add 10 20	New-London, ....	add 1 15	Salem, .....	add 3 0
Bridgeport, .....	add 2 58	Newport, .....	sub. 0 28	Sands' Point, ...	add 3 0
Cape Split, .....	add 2 0	New-Rochelle, ..	add 3 9	Sandy Hook, N.J.	sub. 0 44
Eastport, .....	add 2 9	Norfolk, .....	sub. 0 41	Sunbury, .....	add 0 19
Hellgate, .....	add 1 41	Oyster Bay, ....	add 2 54	Throgg's Neck, ..	add 3 7
Holmes' Hole, ...	add 3 30	Plymouth, .....	add 2 19	Windsor, .....	add 2 49

## ECLIPSES FOR 1859.

THERE will be six Eclipses this year, four of the Sun and two of the Moon, as follows:

I. A Partial Eclipse of the Sun, February 2d. Invisible in the United States.

II. A Total Eclipse of the Moon, February 17th, early in the morning, visible. (See the table below.) The Eclipse ends after the Moon has set, or the Moon will set eclipsed, at which time it will be one-third obscured. It sets from three to seven minutes after the Sun rises, where the horizon is perfect and free. West of the Mississippi the Moon will not set eclipsed.

III. A Partial Eclipse of the Sun, March 4th, invisible in the United States.

IV. A Partial Eclipse of the Sun, July 29th, in the afternoon. This Eclipse will be *very small*, lasting only a few minutes, and occurs about an hour before sunset.

V. A Total Eclipse of the Moon August 13th, invisible in the United States.

VI. A Partial Eclipse of the Sun August 28th, invisible in the United States.

## THE LUNAR ECLIPSE OF FEB. 17 IN THE MORNING.

PRINCIPAL PLACES.	Begins.	Total E-clipse.		PRINCIPAL PLACES	Begins.	Total E-clipse.		Ends.
		From	To			From	To	
	H. M.	H. M.	H. M.		H. M.	H. M.	H. M.	H. M.
Augusta, Me.,.....	4 18	5 15	6 53	Detroit,.....	3 25	4 22	6 0	- - -
Portland, Me., ....	4 16	5 13	6 51	Columbus, O., ....	3 25	4 22	6 0	- - -
Boston,.....	4 13	5 10	6 48	Cincinnati,.....	3 20	4 17	5 55	- - -
Providence,.....	4 12	5 9	6 47	Lansing,.....	3 20	4 17	5 55	- - -
Hartford,.....	4 7	5 4	6 42	Indianapolis,.....	3 13	4 10	5 48	- - -
New-Haven,.....	4 5	5 2	6 40	Chicago,.....	3 7	4 4	5 42	- - -
Albany,.....	4 2	4 59	6 37	Madison,.....	2 59	3 56	5 34	- - -
New-York,.....	4 1	4 58	6 36	Springfield,.....	2 59	3 56	5 34	- - -
Philadelphia,.....	3 57	4 54	6 32	St. Louis,.....	2 56	3 53	5 31	6 48
Utica,.....	3 57	4 54	6 32	Galena,.....	2 56	3 53	5 31	6 48
Baltimore,.....	3 51	4 48	6 26	Iowa City,.....	2 50	3 47	5 25	6 42
Auburn,.....	3 51	4 48	6 26	Jefferson City,....	2 49	3 46	5 24	6 41
Washington,.....	3 49	4 46	6 24	Santa Fee,.....	1 53	2 50	4 28	5 45
Dundee,.....	3 49	4 46	6 24	Oregon City,.....	0 53	1 50	3 28	4 45
Geneva, N. Y.,....	3 49	4 46	6 24	Monterey, Cal.,...	0 50	1 47	3 25	4 42
Rochester,.....	3 46	4 43	6 21	San Francisco,....	0 47	1 44	3 22	4 39
Buffalo,.....	3 42	4 39	6 17	Astoria, Oreg.,....	0 42	1 39	3 17	4 34
Toronto, U. C.,....	3 40	4 37	6 15					

## TO ASCERTAIN THE LENGTH OF THE DAY AND NIGHT,

At any time of the year, add 12 hours to the time of the Sun's setting, and from the sum subtract the time of rising, for the *length of the day*. Subtract the time of setting from 12 hours, and to the remainder add the time of rising next morning, for the *length of the night*. These rules are equally true for *apparent* time.

## EQUINOXES AND SOLSTICES.

		BOSTON.	NEW-YORK.	BALTIMORE.	CINCINNATI.
		D. H. M.	D. H. M.	D. H. M.	D. H. M.
Vernal Equinox,...	March,....	20 4 52 ev.	20 4 40 ev.	20 4 30 ev.	20 3 59 ev.
Summer Solstice, ..	June,.....	21 1 29 ev.	21 1 17 ev.	21 1 7 ev.	21 0 36 ev.
Autumnal Equinox,	September,	23 3 41 m.	23 3 29 m.	23 3 19 m.	23 2 48 m.
Winter Solstice, ...	December,	21 9 28 ev.	21 9 16 ev.	21 9 6 ev.	21 8 35 ev.



MOON'S PHASES.	D	Boston.	N. York.	Baltimore	Pittsbu'gh	Cincinnati
		H M	H M	H M	H M	H M
NEW MOON, (*3d).....	4	0 42 m	0 30 m	0 20 m	0 7 m	*11 48 e
FIRST QUARTER, (†11th)...	12	2 39 m	2 27 m	2 17 m	2 4 m	1 35 m
FULL MOON,.....	18	7 5 e	6 53 e	6 43 e	6 31 e	6 11 e
LAST QUARTER,.....	25	4 1 e	3 49 e	3 39 e	3 26 e	3 8 e

DAY OF MONTH.	DAY OF WEEK.	CALENDAR								CALENDAR								CALENDAR									
		Shadow at the Noon mark.		For Boston, N. England. New-York State, Mi- chigan, Wiscon., Iowa and Oregon.								For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.								For Washington, Maryl'd, Virg'a, Kent'y, Miss'ri, and California.							
				Aft'noon.		SUN rises		SUN sets.		MOON rises.		H. W. Bost.		SUN rises		SUN sets.		MOON rises.		H. W. N. Y.		SUN rises		SUN sets.		MOON rises	
H	M	S	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M			
1	S	12	3	50	7	30	4	38	5	38	9	47	7	24	4	44	5	31	6	33	7	19	4	49	5	24	
2	S	12	4	18	7	30	4	39	6	36	10	36	7	24	4	45	6	28	7	22	7	19	4	50	6	21	
3	M	12	4	46	7	30	4	40	sets		11	19	7	24	4	46	sets		8	5	7	19	4	51	sets		
4	T	12	5	14	7	30	4	41	5	2	morn		7	24	4	47	5	8	8	49	7	19	4	52	5	14	
5	W	12	5	41	7	30	4	42	6	6	0	3	7	24	4	48	6	11	9	31	7	19	4	53	6	16	
6	T	12	6	7	7	30	4	43	7	11	0	45	7	24	4	49	7	14	10	10	7	19	4	54	7	18	
7	F	12	6	34	7	30	4	44	8	13	1	24	7	24	4	50	8	15	10	44	7	19	4	55	8	18	
8	S	12	6	59	7	30	4	45	9	16	1	58	7	24	4	51	9	17	11	26	7	19	4	56	9	19	
9	S	12	7	24	7	30	4	46	10	17	2	34	7	24	4	52	10	17	12	0	7	19	4	57	10	17	
10	M	12	7	49	7	29	4	47	11	22	3	14	7	24	4	53	11	21	morn		7	19	4	58	11	20	
11	T	12	8	13	7	29	4	48	morn		3	57	7	23	4	54	morn		0	43	7	18	4	59	morn		
12	W	12	8	36	7	29	4	49	0	29	4	43	7	23	4	55	0	26	1	29	7	18	5	0	0	24	
13	T	12	8	59	7	28	4	50	1	39	5	37	7	23	4	56	1	35	2	23	7	18	5	1	1	31	
14	F	12	9	21	7	28	4	51	2	54	6	37	7	22	4	57	2	49	3	23	7	17	5	2	2	44	
15	S	12	9	43	7	27	4	53	4	11	7	46	7	22	4	58	4	5	4	32	7	17	5	3	3	58	
16	S	12	10	3	7	27	4	54	5	26	8	57	7	22	4	59	5	19	5	43	7	17	5	4	5	11	
17	M	12	10	23	7	26	4	55	6	21	10	6	7	21	5	0	6	14	6	52	7	16	5	5	6	7	
18	T	12	10	43	7	26	4	56	rises		11	3	7	21	5	1	rises		7	49	7	16	5	6	rises		
19	W	12	11	1	7	25	4	58	6	3	11	59	7	20	5	3	6	6	8	45	7	15	5	7	6	11	
20	T	12	11	19	7	24	4	59	7	23	ev. 50		7	19	5	4	7	25	9	36	7	14	5	8	7	23	
21	F	12	11	36	7	23	5	0	8	40	1	35	7	18	5	5	8	41	10	21	7	14	5	9	8	41	
22	S	12	11	52	7	22	5	1	9	52	2	17	7	18	5	6	9	52	11	3	7	13	5	10	9	51	
23	S	12	12	8	7	22	5	3	11	4	3	2	7	17	5	8	11	2	11	48	7	12	5	12	11	0	
24	M	12	12	23	7	21	5	4	morn		3	49	7	16	5	9	morn		ev. 35	7	12	5	13	morn			
25	T	12	12	37	7	20	5	5	0	11	4	38	7	15	5	10	0	8	1	24	7	11	5	14	0	5	
26	W	12	12	50	7	20	5	6	1	20	5	31	7	15	5	11	1	15	2	17	7	10	5	15	1	11	
27	T	12	13	2	7	19	5	7	2	26	6	29	7	14	5	12	2	21	3	15	7	10	5	16	2	15	
28	F	12	13	14	7	18	5	9	3	32	7	31	7	13	5	13	3	26	4	17	7	9	5	17	3	19	
29	S	12	13	25	7	17	5	10	4	31	8	29	7	12	5	15	4	24	5	15	7	8	5	19	4	16	
30	S	12	13	35	7	16	5	11	5	23	9	25	7	12	5	16	5	16	6	11	7	8	5	20	5	8	
31	M	12	13	44	7	15	5	13	6	4	10	15	7	11	5	17	5	58	7	1	7	7	5	21	5	51	

THE GREGORIAN YEAR, AND OLD AND NEW STYLE.—The inquiry is often made, "What is the meaning of the expression, 'March 7, 1738-9?'" The real date is March 7, 1739. The civil or legal year in England formerly commenced on the 25th day of March. This practice continued throughout the British dominions till the year 1752. Then the new, or the Gregorian style was introduced, which makes the year commence the 1st of January. But before that period, (1752,) as some other nations had adopted the new style, it was usual for English writers to designate both years, if the event occurred before the 25th day of March. Thus we have Washington's birth designated, February 11, 1731-2. That is, if the year commenced the 25th of March, it would be February 11, 1731. If the year commenced the 1st of January, it would be February 11, 1732, or according to new style, February 22, 1732.

In order to make the above statements more fully clear, it is needful to remember

## MOON'S PHASES.

		Boston.	N. York.	Baltimore	Pittsbu'gh	Cincinnati
	D	H M	H M	H M	H M	H M
NEW MOON, .....	2	8 20 e	8 8 e	7 58 e	7 45 e	7 27 e
FIRST QUARTER, .....	10	2 56 e	2 44 e	2 34 e	2 21 e	2 3 e
FULL MOON, .....	17	5 53 m	5 46 m	5 36 m	5 23 m	5 4 m
LAST QUARTER, .....	24	9 33 m	9 26 m	9 16 m	9 2 m	8 44 m

DAY OF MONTH	DAY OF WEEK	CALENDAR								CALENDAR				CALENDAR					
		Shadow at the Noon mark.		For Boston, N. England. New-York State, Michigan, Wiscon., Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, Mary'd, Virg'a, Kent'y, Miss'ri, and California.							
				Aft'noon.		SUN rises	SUN sets.	MOON rises	H. W. Bost.	SUN rises	SUN sets.	MOON rises.	H. W. N. Y.	SUN rises	SUN sets.	MOON rises			
		H	M	S	H	M	H	M	H	M	H	M	H	M	H	M			
1	T	12	3	50	7	14	5	14	6	41	10	58	7	10	5	18			
2	W	12	4	18	7	13	5	15	sets	11	36	7	9	5	19	sets			
3	T	12	4	46	7	11	5	16	6	4	morn	7	7	5	20	6	7		
4	F	12	5	14	7	10	5	18	7	9	0	15	7	6	5	22	7	10	
5	S	12	5	4	7	9	5	19	8	12	0	51	7	5	5	23	8	12	
6	S	12	6	7	7	8	5	20	9	15	1	28	7	4	5	24	9	14	
7	M	12	6	34	7	7	5	22	10	20	1	59	7	3	5	25	10	18	
8	T	12	6	59	7	6	5	23	11	27	2	37	7	2	5	26	11	24	
9	W	12	7	24	7	5	5	25	morn	3	22	7	1	5	28	morn	0	8	
10	T	12	7	49	7	4	5	26	0	40	4	11	7	0	5	29	0	35	
11	F	13	8	13	7	2	5	27	1	54	5	10	6	59	5	30	1	48	
12	S	12	8	36	7	1	5	29	3	6	6	20	6	58	5	31	2	59	
13	S	12	8	59	7	0	5	30	4	13	7	35	6	57	5	32	4	6	
14	M	12	9	21	6	58	5	31	5	9	8	48	6	56	5	33	5	3	
15	T	12	9	43	6	57	5	33	5	55	9	55	6	54	5	34	5	50	
16	W	12	10	3	6	55	5	34	rises	10	51	6	53	5	36	rises	7	37	
17	T	12	10	23	6	54	5	35	6	11	11	37	6	51	5	37	6	13	
18	F	12	10	43	6	52	5	36	7	28	ev. 24	6	50	5	38	7	28	9	10
19	S	12	11	1	6	51	5	38	8	41	1	7	6	49	5	40	8	40	
20	S	12	11	19	6	50	5	39	9	52	1	46	6	48	5	41	9	50	
21	M	12	11	36	6	48	5	41	11	3	2	26	6	46	5	43	10	59	
22	T	12	11	52	6	47	5	42	morn	3	13	6	45	5	44	morn	11	59	
23	W	12	12	8	6	45	5	43	0	14	4	4	6	43	5	45	0	8	
24	T	12	12	23	6	44	5	45	1	19	4	59	6	42	5	47	1	13	
25	F	12	12	37	6	42	5	46	2	21	5	59	6	40	5	48	2	14	
26	S	12	12	50	6	40	5	47	3	16	7	2	6	38	5	49	3	9	
27	S	12	13	2	6	38	5	48	4	3	8	2	6	37	5	50	3	56	
28	M	12	13	14	6	37	5	49	4	41	8	58	6	35	5	51	4	35	

that a year is designated to include the exact period of time which the earth takes to make one revolution around the sun. This is accomplished in 365 days and nearly 6 hours; but as the calendar must consist of complete days, these six hours are omitted, and in four years they make up a whole day, when one is added to the year, making what is called a leap-year. This, however, is not strictly correct, for it is ascertained by accurate calculations, that a solar year is exactly 365 days, 5 hours, 48 minutes, and 57.7 seconds; consequently, in putting on the 6 hours, we add 11 minutes 12.4 seconds in four years. This, in the course of 158½ years would amount to 24 hours, or a complete day. If this were permitted to go on, the 1st of January would gradually fall back towards midsummer; and in the time of Pope Gregory XIII., (1582,) it was found that the vernal equinox, which, A. D. 325, happened on the 21st of March, actually occurred on the 10th. The Pope, for the purpose of restoring the correctness of the calendar, ordered 10 days to be dropped that year. This reformation was called "the new style," while the former calendar was denominated "the old style." This new style was not adopted in England until 1752, when it was



## MOON'S PHASES.

		Boston.	N. York.	Baltimore	Pittsbu'gh	Cincinnati
	D	H M	H M	H M	H M	H M
NEW MOON, .....	4	2 26 e	2 14 e	2 4 e	1 52 e	1 33 e
FIRST QUARTER, .....	11	11 56 e	11 44 e	11 34 e	11 21 e	11 2 e
FULL MOON, .....	18	5 1 e	4 49 e	4 39 e	4 27 e	4 8 e
LAST QUARTER, .....	26	4 42 m	4 30 m	4 20 m	4 7 m	3 48 m

DAY OF MONTH.	DAY OF WEEK.	CALENDAR					CALENDAR					CALENDAR				
		For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.					For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.					For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.				
		Shadow at the Noon mark.	SUN rises	SUN sets.	MOON rises.	H. W. Bost.	SUN rises	SUN sets.	MOON rises.	H. W. N. Y.	SUN rises	SUN sets.	MOON rises.	SUN rises	SUN sets.	MOON rises.
		Aft'noon.	H M S	H M H M	H M H M	H M	H M H M	H M H M	H M H M	H M	H M H M	H M H M	H M H M	H M H M	H M H M	H M H M
1	T	12 12 35	6 36 5	5 51	5 14	9 47	6 35 5	5 53	5 9	6 33	6 33 5	5 52	5 4			
2	W	12 12 23	6 35 5	5 52	5 38	10 29	6 34 5	5 53	5 34	7 15	6 31 5	5 53	5 30			
3	T	12 12 10	6 33 5	5 53	6 1	11 4	6 32 5	5 54	5 58	7 50	6 30 5	5 54	5 56			
4	F	12 11 57	6 31 5	5 54	sets	11 41	6 30 5	5 55	sets	8 27	6 29 5	5 55	sets			
5	S	12 11 44	6 30 5	5 55	7 6	morn	6 29 5	5 56	7 6	9 4	6 27 5	5 56	7 5			
6	N	12 11 30	6 28 5	5 56	8 11	0 18	6 27 5	5 57	8 10	9 40	6 26 5	5 57	8 8			
7	M	12 11 16	6 26 5	5 57	9 20	0 54	6 25 5	5 57	9 16	10 17	6 25 5	5 58	9 14			
8	T	12 11 1	6 25 5	5 58	10 30	1 31	6 24 5	5 59	10 26	10 57	6 24 5	5 59	10 21			
9	W	12 10 46	6 23 5	5 59	11 43	2 11	6 22 6	0	11 38	11 45	6 22 6	0	11 53			
10	T	12 10 30	6 21 6	0	morn	2 59	6 20 6	1	morn	morn	6 20 6	1	morn			
11	F	12 10 14	6 20 6	2	0 55	3 56	6 19 6	2	0 49	0 42	6 18 6	2	0 42			
12	S	12 9 58	6 18 6	3	2 2	5 0	6 17 6	3	1 54	1 46	6 17 6	3	1 47			
13	S	12 9 42	6 16 6	4	3 3	6 16	6 16 6	4	2 56	3 2	6 15 6	4	2 49			
14	M	12 9 25	6 14 6	5	3 51	7 29	6 14 6	5	3 45	4 15	6 14 6	5	3 39			
15	T	12 9 8	6 13 6	6	4 28	8 38	6 12 6	7	4 24	5 24	6 13 6	6	4 19			
16	W	12 8 50	6 11 6	7	4 59	9 36	6 11 6	8	4 56	6 22	6 11 6	7	4 52			
17	T	12 8 33	6 9 6	9	5 26	10 27	6 9 6	9	5 24	7 1	6 10 6	8	5 22			
18	F	12 8 15	6 7 6	10	rises	11 10	6 7 6	10	rises	7 56	6 8 6	9	rises			
19	S	12 7 57	6 6 6	11	7 29	11 52	6 6 6	11	7 27	8 38	6 6 6	10	7 25			
20	S	12 7 39	6 4 6	12	8 42	ev	36 6	4 6	12	8 39	9 22	6 5 6	11	8 35		
21	M	12 7 21	6 2 6	13	9 52	1 15	6 2 6	13	9 47	10 1	6 3 6	12	9 42			
22	T	12 7 3	6 0 6	14	11 1	1 57	6 1 6	14	10 56	10 43	6 2 6	13	10 50			
23	W	12 6 44	5 59 6	15	morn	2 43	5 59 6	15	12 0	11 29	5 1 6	14	11 53			
24	T	12 6 26	5 57 6	17	0 6	3 35	5 58 6	16	morn	ev.	21 6	0 6	15	morn		
25	F	12 6 7	5 55 6	18	1 7	4 31	5 56 6	17	0 59	1 17	5 59 6	16	0 52			
26	S	12 5 49	5 53 6	19	1 56	5 30	5 54 6	18	1 50	2 16	5 57 6	17	1 42			
27	S	12 5 30	5 52 6	20	2 38	6 29	5 52 6	19	2 32	3 13	5 56 6	18	2 26			
28	M	12 5 12	5 50 6	21	3 12	7 29	5 51 6	20	3 7	4 15	5 54 6	19	3 1			
29	T	12 4 53	5 48 6	22	3 41	8 18	5 49 6	21	3 37	5 4	5 53 6	20	3 32			
30	W	12 4 35	5 46 6	23	4 6	9 9	5 47 6	22	4 3	5 55	5 52 6	21	4 0			
31	T	12 4 17	5 45 6	24	4 26	9 52	5 46 6	23	4 24	6 38	5 50 6	22	4 22			

found that another day had accumulated. An act of Parliament was then passed, in which it was directed that 11 days be dropped out of the calendar in 1752.

In this country the old style was not discarded in colloquial discourse until about fifty years ago. To guard against the disarrangement of the calendar in future, chronologers now omit the leap-year at the end of three or four centuries, which plan is found to balance the excess of 11 minutes 12.4 seconds, this being added by making every fourth year leap-year, as people generally suppose. The year 1800 was not a leap-year, for one of these intercalary days had accumulated, and was dropped; and the same will have to be done in 1900. There are now, therefore, twelve days difference between the old and new styles; and in order to compute the date of events correctly, and not fall into blunders which even some able historians have not avoided,

MOON'S PHASES.	D	Boston.		N. York.		Baltimore		Pittsburgh		Cincinnati	
		H	M	H	M	H	M	H	M	H	M
NEW MOON,.....	3	5	33 m	5	21 m	5	11 m	4	49 m	4	39 m
FIRST QUARTER,.....	10	6	37 m	6	25 m	6	15 m	6	3 m	5	43 m
FULL MOON,.....	17	4	22 m	4	10 m	4	0 m	3	48 m	3	28 m
LAST QUARTER, (*25 <sup>h</sup> ) ..	24	*0	1 m	11	49 e	11	39 e	11	27 e	11	8 e

DAY OF MONTH.	DAY OF WEEK.	Shadow at the Noon mark.	CALENDAR					CALENDAR					CALENDAR				
			For Boston, N. England, New-York State, Michigan, Wisconsin, Iowa and Oregon.					For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.					For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.				
			Aft'noon	SUN rises	SUN sets.	MOON rises	H. W. Bost.	SUN rises	SUN sets.	MOON rises.	H. W. N. Y.	SUN rises	SUN sets.	MOON rises.			
		H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M			
1	F	12 3 51	5 43	6 26	4 44	10 30	5 45	6 24	4 44	7 16	5 46	6 23	4 43				
2	S	12 3 40	5 42	6 28	sets	11 5	5 44	6 26	sets	7 51	5 45	6 24	sets				
3	S	12 3 22	5 40	6 29	7 7	11 45	5 42	6 27	7 5	8 31	5 43	6 25	7 2				
4	M	12 3 5	5 38	6 30	8 17	morn	5 40	6 28	8 14	9 13	5 41	6 26	8 9				
5	T	12 2 47	5 36	6 31	9 30	0 27	5 38	6 29	9 25	9 56	5 40	6 27	9 20				
6	W	12 2 30	5 34	6 32	10 45	1 10	5 36	6 30	10 39	10 43	5 38	6 28	10 33				
7	T	12 2 12	5 32	6 33	11 55	1 57	5 34	6 31	11 49	11 35	5 36	6 29	11 41				
8	F	12 1 55	5 31	6 34	morn	2 43	5 33	6 32	morn	morn	5 35	6 30	morn				
9	S	12 1 38	5 29	6 35	0 57	3 52	5 31	6 33	0 50	0 38	5 33	6 31	0 43				
10	S	12 1 22	5 27	6 36	1 47	4 57	5 29	6 34	1 41	1 43	5 31	6 32	1 35				
11	M	12 1 5	5 26	6 37	2 29	5 10	5 28	6 35	2 24	2 56	5 30	6 33	2 19				
12	T	12 0 49	5 24	6 38	3 0	7 14	5 26	6 36	2 57	4 0	5 28	6 34	2 53				
13	W	12 0 33	5 23	6 40	3 28	8 14	5 25	6 37	3 26	5 0	5 27	6 35	3 23				
14	T	12 0 18	5 21	6 41	3 50	9 11	5 24	6 38	3 49	5 57	5 26	6 36	3 48				
15	F	12 0 3	5 19	6 42	4 13	9 59	5 22	6 39	4 14	6 45	5 24	6 37	4 14				
16	S	11 59 48	5 18	6 43	rises	10 42	5 21	6 40	rises	7 28	5 23	6 38	rises				
17	S	11 59 33	5 16	6 44	7 30	11 24	5 19	6 41	7 27	8 10	5 22	6 39	7 22				
18	M	11 59 19	5 14	6 45	8 41	ev. 6	5 17	6 42	8 36	8 52	5 20	6 40	8 31				
19	T	11 59 6	5 13	6 47	9 50	0 49	5 16	6 44	9 44	9 35	5 19	6 41	9 38				
20	W	11 58 52	5 11	6 48	10 53	1 40	5 14	6 45	10 47	10 26	5 17	6 42	10 39				
21	T	11 58 40	5 10	6 49	11 48	2 20	5 13	6 46	11 42	11 6	5 16	6 43	11 34				
22	F	11 58 27	5 8	6 50	morn	3 11	5 11	6 47	morn	11 57	5 14	6 44	morn				
23	S	11 58 15	5 6	6 51	0 35	4 3	5 10	6 48	0 28	ev. 49	5 13	6 45	0 21				
24	S	11 58 4	5 5	6 52	1 12	4 56	5 9	6 49	1 7	1 42	5 12	6 46	1 1				
25	M	11 57 53	5 3	6 53	1 42	5 59	5 7	6 50	1 37	2 36	5 10	6 46	1 32				
26	T	11 57 42	5 2	6 54	2 8	6 43	5 6	6 51	2 4	3 29	5 9	6 47	2 0				
27	W	11 57 33	5 1	6 55	2 29	7 34	5 5	6 52	2 27	4 20	5 8	6 48	2 24				
28	T	11 57 25	4 59	6 56	2 47	8 21	5 3	6 53	2 46	5 7	5 6	6 49	2 45				
29	F	11 57 14	4 58	6 58	3 7	9 7	5 2	6 54	3 7	5 53	5 5	6 50	3 8				
30	S	11 57 6	4 56	6 59	3 28	9 52	5 0	6 55	3 29	6 38	5 3	6 51	3 31				

we should recollect to allow ten days for the sixteenth and seventeenth centuries, eleven for the 18th, and twelve for the nineteenth.

**DIRECTIONS FOR FINDING THE TRUE TIME.**—The Sun is on the meridian at 12 o'clock on four days only in the year. It is sometimes as much as 16½ minutes before or after twelve when its shadow strikes the noon-mark on the sun-dial. On each calendar page of this Almanac, is shown the exact time when the Sun reaches the meridian, or the shadow the noon-mark; and in order to set a clock or watch correctly, it must, when it is noon by the sun-dial or noon-mark, be set at the time indicated in the Almanac. Thus, on the 25th of January, when the Sun is on the noon-mark, the watch must be set 12 minutes and 44 seconds past twelve, which will be the true time. The practice of setting time-pieces by the rising or setting of the Sun or Moon is not strictly correct; as the unevenness of the Earth's surface and intervening objects, such as hills and forests, near the points of rising and setting, occasion a deviation,



MOON'S PHASES.	D	Boston.		N. York.		Baltimore		Pittsburgh		Cincinnati	
		H	M	H	M	H	M	H	M	H	M
NEW MOON, .....	2	5	20 e	5	8 e	4	53 e	4	46 e	4	27 e
FIRST QUARTER, .....	9	0	15 e	0	3 e	11	53 m	11	41 m	11	22 m
FULL MOON, .....	16	4	23 e	4	11 e	4	1 e	3	48 e	3	29 e
LAST QUARTER, .....	24	6	5 e	5	53 e	5	43 e	5	31 e	5	12 e

DAY OF MONTH	DAY OF WEEK.	CALENDAR								CALENDAR								CALENDAR								
		Shadow at the Noon mark.		For Boston, N. England, New-York State, Michigan, Wisconsin, Iowa and Oregon.						For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio Indiana and Illinois.						For Washington, MaryPd, Virg'a, Kent'y, Miss'sri, and California.										
				Morning		SUN rises	SUN sets.	MOON rises.	H. W. Bost.	SUN rises	SUN sets.	MOON rises.	H. W. N. Y.	SUN rises	SUN sets.	MOON rises.										
		H	M	S	H	M	H	M	H	M	H	M	H	M	H	M	H	M								
1	C	11	56	53	4	54	6	59	3	50	10	35	4	59	6	55	3	53	7	21	5	2	6	52	3	56
2	M	11	56	51	4	53	7	0	sets	11	18	4	58	6	56	sets	8	4	5	1	6	53	sets			
3	T	11	56	44	4	51	7	1	8	29	morn	4	57	6	57	8	23	8	52	5	0	6	54	8	17	
4	W	11	56	38	4	50	7	2	9	42	0	6	4	56	6	58	9	36	9	44	4	59	6	55	9	29
5	T	11	56	32	4	49	7	3	10	49	0	53	4	55	6	59	10	43	10	36	4	58	6	56	10	35
6	F	11	56	27	4	48	7	4	11	43	1	50	4	54	7	0	11	37	11	31	4	57	6	56	11	30
7	S	11	56	23	4	47	7	5	morn	2	45	4	53	7	1	morn	morn		4	56	6	57	morn			
8	S	11	56	19	4	46	7	6	0	28	3	46	4	52	7	2	0	23	0	32	4	55	6	58	0	17
9	M	11	56	15	4	45	7	7	1	4	4	49	4	51	7	3	1	0	1	35	4	54	6	59	0	55
10	T	11	56	12	4	44	7	8	1	30	5	49	4	50	7	4	1	28	2	35	4	53	7	0	1	25
11	W	11	56	10	4	43	7	9	1	55	6	50	4	49	7	5	1	54	3	36	4	52	7	1	1	52
12	T	11	56	8	4	42	7	10	2	20	7	44	4	48	7	6	2	20	4	30	4	51	7	2	2	19
13	F	11	56	7	4	41	7	11	2	41	8	39	4	47	7	7	2	42	5	25	4	50	7	3	2	44
14	S	11	56	6	4	40	7	12	3	3	9	26	4	45	7	8	3	5	6	12	4	49	7	4	3	8
15	S	11	56	6	4	39	7	13	3	29	10	15	4	44	7	9	3	33	7	1	4	48	7	5	3	37
16	M	11	56	7	4	38	7	14	rises		11	0	4	43	7	10	rises		7	46	4	47	7	6	rises	
17	T	11	56	8	4	37	7	15	8	33	11	42	4	42	7	11	8	32	8	28	4	46	7	7	8	25
18	W	11	56	9	4	36	7	16	9	37	ev. 30	4	41	7	12	9	30		9	16	4	45	7	7	9	23
19	T	11	56	12	4	35	7	17	10	27	1	15	4	40	7	13	10	20	10	1	4	44	7	8	10	13
20	F	11	56	14	4	35	7	18	11	6	1	58	4	39	7	14	11	0	10	44	4	44	7	9	10	54
21	S	11	56	18	4	34	7	19	11	41	2	44	4	38	7	15	11	36	11	30	4	43	7	10	11	31
22	S	11	56	22	4	33	7	20	morn	3	31	4	37	7	16	morn	ev. 17		4	42	7	10	12	0		
23	M	11	56	26	4	32	7	21	0	8	4	16	4	36	7	17	0	4	1	2	4	42	7	11	morn	
24	T	11	56	31	4	31	7	22	0	30	5	5	4	35	7	18	0	27	1	51	4	41	7	12	0	24
25	W	11	56	36	4	30	7	23	0	50	5	51	4	35	7	19	0	48	2	37	4	40	7	13	0	47
26	T	11	56	42	4	29	7	24	1	10	6	39	4	34	7	20	1	10	3	25	4	40	7	14	1	9
27	F	11	56	49	4	28	7	25	1	29	7	32	4	33	7	21	1	30	4	18	4	39	7	14	1	31
28	S	11	56	56	4	28	7	26	1	50	8	24	4	33	7	22	1	52	5	10	4	38	7	15	1	54
29	S	11	57	3	4	27	7	27	2	14	9	15	4	32	7	23	2	18	6	1	4	38	7	16	2	21
30	M	11	57	11	4	26	7	28	2	47	10	8	4	31	7	23	2	51	6	54	4	37	7	16	2	56
31	T	11	57	20	4	26	7	28	sets	11	2	4	31	7	24	sets	7	48	4	37	7	17	sets			

in every place, from the time expressed in the Almanac, which time is adapted to a smooth, level horizon. The only means of keeping correct time is by the use of a noon-mark, or a meridian-line.

NEW PLANETS DISCOVERED IN 1857.—The number of planetary bodies belonging to the solar system was increased during the year 1857, by the discovery of eight new asteroids. The forty-third Asteroidal planet was discovered April 15, 1857, by Mr. Pogson of the Radcliffe Observatory, Oxford, England. It appears as a star of the ninth magnitude, and has received the name of *Adriadne*.

The forty-fourth was discovered by M. Goldschmidt of Paris, May 27. It appears as a star of the tenth or eleventh magnitude, and has received the name of *Nysa*.

The forty-fifth was also discovered by M. Goldschmidt, on the 28th of June, and has been called *Eugenia*.

## MOON'S PHASES.

		Boston.	N. York.	Baltimore	Pittsbu'gh	Cincinnati
	D	H M	H M	H M	H M	H M
NEW MOON,.....	1	2 26 m	2 14 m	2 4 m	1 52 m	1 33 m
FIRST QUARTER,.....	7	6 4 e	5 52 e	5 42 e	5 28 e	5 10 e
FULL MOON,.....	15	5 34 m	5 22 m	5 12 m	4 59 m	4 40 m
LAST QUARTER,.....	23	9 48 m	9 36 m	9 26 m	9 13 m	8 54 m
NEW MOON,.....	30	9 57 m	9 45 m	9 35 m	9 22 m	9 4 m

DAY OF MONTH.	DAY OF WEEK.	CALENDAR													
		Shadow at the Noon mark.		For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.			
		Morning	SUN rises	SUN sets.	MOON sets	H. W. Bost.	SUN rises	SUN sets.	MOON sets	H. W. N. Y.	SUN rises	SUN sets.	MOON sets		
		H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
1	W	11 57 28	4 25	7 29	8 33	11 54	4 31	7 24	8 27	8 40	4 36	7 18	8 19		
2	T	11 57 38	4 24	7 30	9 36	morn	4 30	7 25	9 29	9 36	4 36	7 19	9 22		
3	F	11 57 47	4 24	7 30	10 23	0 50	4 30	7 25	10 19	10 30	4 35	7 19	10 13		
4	S	11 57 57	4 25	7 31	11 4	1 44	4 29	7 26	10 59	11 22	4 35	7 20	10 54		
5	S	11 58 7	4 23	7 32	11 34	2 36	4 29	7 27	11 31	morn	4 35	7 20	11 28		
6	M	11 58 18	4 23	7 33	12 0	3 32	4 28	7 27	11 58	0 18	4 34	7 21	11 56		
7	T	11 58 29	4 22	7 33	morn	4 25	4 28	7 28	morn	1 11	4 34	7 21	morn		
8	W	11 58 40	4 22	7 34	0 22	5 18	4 28	7 28	0 22	2 4	4 34	7 22	0 21		
9	T	11 58 51	4 22	7 35	0 45	6 16	4 28	7 29	0 46	3 2	4 34	7 22	0 47		
10	F	11 59 3	4 22	7 35	1 7	7 9	4 28	7 29	1 9	3 55	4 34	7 23	1 12		
11	S	11 59 15	4 22	7 36	1 32	8 5	4 28	7 30	1 36	4 51	4 34	7 24	1 40		
12	S	11 59 27	4 22	7 37	2 0	8 59	4 28	7 30	2 5	5 45	4 34	7 25	2 10		
13	M	11 59 38	4 22	7 37	2 34	9 51	4 28	7 31	2 40	6 37	4 34	7 25	2 46		
14	T	11 59 52	4 22	7 38	rises	10 39	4 28	7 31	rises	7 25	4 34	7 26	rises		
15	W	afternoon	4 22	7 38	8 22	11 23	4 28	7 32	8 15	8 9	4 33	7 27	8 8		
16	T	12 0 17	4 22	7 38	9 5	ev. 11	4 28	7 32	8 59	8 57	4 33	7 27	8 52		
17	F	12 0 30	4 22	7 39	9 41	0 55	4 28	7 33	9 36	9 41	4 33	7 28	9 30		
18	S	12 0 42	4 22	7 39	10 10	1 36	4 28	7 33	10 5	10 22	4 33	7 28	10 1		
19	S	12 0 55	4 23	7 39	10 35	2 14	4 29	7 34	10 32	11 0	4 33	7 28	10 28		
20	M	12 1 8	4 23	7 39	10 55	2 54	4 29	7 34	10 53	11 40	4 34	7 28	10 51		
21	T	12 1 21	4 23	7 39	11 14	3 35	4 29	7 34	11 13	ev. 21	4 34	7 28	11 12		
22	W	12 1 34	4 23	7 40	11 33	4 15	4 29	7 34	11 38	1 1	4 34	7 29	11 33		
23	T	12 1 47	4 23	7 40	11 51	4 59	4 29	7 35	11 53	1 45	4 34	7 29	11 54		
24	F	12 2 0	4 24	7 40	morn	5 51	4 30	7 35	morn	2 37	4 35	7 29	morn		
25	S	12 2 1	4 24	7 40	0 14	6 44	4 30	7 35	0 17	3 30	4 35	7 29	0 20		
26	S	12 2 26	4 24	7 40	0 40	7 43	4 30	7 35	0 44	4 29	4 35	7 29	0 49		
27	M	12 2 38	4 25	7 40	1 12	8 46	4 30	7 35	1 17	5 32	4 35	7 29	1 23		
28	T	12 2 51	4 25	7 40	1 55	9 50	4 31	7 35	2 2	6 36	4 36	7 29	2 8		
29	W	12 3 3	4 25	7 40	sets	10 50	4 31	7 35	sets	7 36	4 36	7 29	sets		
30	T	12 3 15	4 25	7 40	8 13	11 45	4 31	7 35	8 7	8 31	4 36	7 29	8 1		

The forty-sixth was discovered by Mr. Pogson of Oxford, England, on the 16th of August, and has received the name of Pales.

The forty-seventh was discovered by M. Luther of the Observatory of Bilk, on the 15th of September, and has received the name of Hestia.

The forty-eighth and forty-ninth asteroids were discovered by M. Goldschmidt on the same evening, September 19th. The forty-eighth resembles a star of the eleventh magnitude, and the forty-ninth changes in brightness from the tenth to the eleventh magnitude. It has been suggested in the French Academy, that these two asteroids should be termed the twins, and that to distinguish them, one should be named No. 1 and the other No. 2.

The fiftieth asteroid was discovered by Mr. Fergusson of the Observatory of Washington, on the evening of the 4th of October, and has received the name of Virginia.



MOON'S PHASES.	D	Boston.		N. York.		Baltimore.		Pittsburgh		Cincinnati	
		H	M	H	M	H	M	H	M	H	M
FIRST QUARTER,.....	7	1	10 m	0	58 m	0	48 m	0	36 m	0	17 m
FULL MOON,.....	14	8	9 e	7	57 e	7	47 e	7	34 e	7	16 e
LAST QUARTER,.....	22	10	44 e	10	32 e	10	22 e	10	9 e	9	50 e
NEW MOON,.....	29	5	0 e	4	48 e	4	38 e	4	25 e	4	7 e

DAY OF MONTH.	DAY OF WEEK.	Shadow at the Noon mark.	CALENDAR				CALENDAR				CALENDAR			
			For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, Mary'ld, Virg'a, Kent'y, Miss'r, and California.			
			Aft'noon.	SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.
			H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	F		12 3 27	4 26	7 40	8 55	morn	4 31	7 35	8 50	9 28	4 37	7 29	8 45
2	S		12 3 39	4 26	7 40	9 35	0 42	4 32	7 35	9 31	10 18	4 37	7 29	9 27
3	%		12 3 50	4 27	7 40	10 1	1 32	4 32	7 35	9 59	11 3	4 38	7 29	9 57
4	M		12 4 1	4 27	7 39	10 26	2 27	4 33	7 34	10 25	11 52	4 38	7 28	10 25
5	T		12 4 12	4 28	7 39	10 49	3 6	4 33	7 34	10 49	morn	4 39	7 28	10 50
6	W		12 4 22	4 29	7 39	11 10	3 54	4 34	7 34	11 12	0 40	4 40	7 28	11 14
7	T		12 4 32	4 29	7 39	11 35	4 45	4 34	7 34	11 38	1 31	4 40	7 28	11 42
8	F		12 4 42	4 30	7 38	morn	5 40	4 35	7 33	morn	2 26	4 41	7 27	morn
9	S		12 4 51	4 31	7 38	0 3	6 34	4 36	7 33	0 7	3 20	4 42	7 27	0 12
10	S		12 5 0	4 31	7 38	0 35	7 36	4 37	7 33	0 40	4 22	4 42	7 27	0 46
11	M		12 5 8	4 32	7 37	1 13	8 35	4 38	7 32	1 19	5 21	4 43	7 26	1 26
12	T		12 5 16	4 33	7 37	2 1	9 32	4 39	7 32	2 8	6 18	4 44	7 26	2 15
13	W		12 5 23	4 34	7 36	2 55	10 24	4 39	7 31	3 2	7 10	4 45	7 25	3 9
14	T		12 5 30	4 35	7 36	rises	11 6	4 40	7 31	rises	7 52	4 45	7 25	rises
15	F		12 5 36	4 36	7 35	8 13	10 50	4 41	7 30	8 8	8 36	4 46	7 24	8 3
16	S		12 5 42	4 37	7 34	8 39	ev. 31	4 42	7 29	8 35	9 17	4 47	7 24	8 31
17	S		12 5 48	4 38	7 34	9 0	1 8	4 43	7 29	8 57	9 54	4 48	7 23	8 55
18	M		12 5 53	4 39	7 33	9 18	1 41	4 43	7 28	9 16	10 27	4 49	7 23	9 15
19	T		12 5 57	4 39	7 32	9 38	2 16	4 44	7 27	9 38	11 2	4 50	7 22	9 37
20	W		12 6 1	4 40	7 32	9 57	2 51	4 45	7 27	9 58	11 39	4 50	7 22	9 59
21	T		12 6 4	4 41	7 31	10 17	3 34	4 46	7 26	10 19	ev. 20	4 51	7 21	10 22
22	F		12 6 7	4 42	7 30	10 40	4 19	4 47	7 25	10 44	1 5	4 52	7 20	10 48
23	S		12 6 9	4 43	7 29	11 9	5 10	4 48	7 24	11 14	1 56	4 53	7 19	11 19
24	S		12 6 11	4 44	7 28	11 46	6 7	4 49	7 23	11 52	2 53	4 53	7 18	11 58
25	M		12 6 12	4 45	7 27	morn	7 17	4 49	7 22	morn	4 3	4 54	7 17	morn
26	T		12 6 13	4 46	7 26	0 33	8 28	4 50	7 22	0 40	5 14	4 55	7 16	0 47
27	W		12 6 13	4 47	7 25	1 37	9 38	4 51	7 21	1 44	6 24	4 56	7 15	1 51
28	T		12 6 12	4 48	7 24	2 51	10 39	4 52	7 20	2 57	7 25	4 56	7 14	3 4
29	F		12 6 11	4 49	7 23	sets	11 30	4 53	7 19	sets	8 16	4 57	7 14	sets
30	S		12 6 9	4 50	7 22	7 46	morn	4 54	7 18	7 43	9 10	4 58	7 14	7 40
31	S		12 6 7	4 51	7 21	8 28	0 24	4 55	7 17	8 27	9 56	4 59	7 13	8 25

**LEAP YEAR.**—Every year the number of which is divisible by 4 without a remainder, is a leap-year, except the last year of the century, which is a leap-year only when divisible by 400 without a remainder. Thus the year 1900 will not be leap-year.

**CHRONOLOGICAL CYCLES.**—Dominical Letter, C; Golden Number, 16; Jewish Lunar Cycle, 13; Epact, 15; Solar Cycle, 19; Julian Period, 6571; age of the world, 5861.

**ON THE RINGS OF SATURN.**—The theory of the gradual approximation of the rings towards Saturn, as advanced by several astronomical authorities, has been recently investigated by the Rev. Mr. Main of England, and Professors Kaiser and Secchi. Mr. Main, after submitting a series of observations of the rings to a searching investigation, came to the conclusion that there exist no real grounds for the hypothesis that the bright rings are gradually approaching the body of the planet. A similar

## MOON'S PHASES.

		Boston.	N. York.	Baltimore	Pittsbu'gh	Cincinnati
		H M	H M	H M	H M	H M
FIRST QUARTER,.....	5	10 38 m	10 26 m	10 16 m	10 3 m	9 44 m
FULL MOON,.....	13	11 52 m	11 40 m	11 30 m	11 17 m	10 58 m
LAST QUARTER,.....	21	9 2 m	8 50 m	8 40 m	8 28 m	8 9 m
NEW MOON,.....	27	11 42 e	11 30 e	11 20 e	11 7 e	10 38 e

DAY OF MONTH.	DAY OF WEEK.	CALENDAR												CALENDAR												CALENDAR											
		Shadow at the Noon mark.		For Boston, N. England, New-York State, Mi- chigan, Wiscon., Iowa and Oregon.								For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.								For Washington, Mary'd, Virga, Kent'y, Miss'ri, and California.																	
				Aft'noon.		SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.																					
		H	M	S	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M													
1	M	12	6	4	4	52	7	20	8	50	1	10	4	56	7	16	8	50	10	38	5	0	7	12	8	51											
2	T	12	6	0	4	53	7	19	9	14	1	52	4	57	7	15	9	15	11	20	5	1	7	11	9	17											
3	W	12	5	56	4	54	7	18	9	39	2	34	4	58	7	14	9	41	morn	5	2	7	10	9	44												
4	T	12	5	51	4	55	7	16	10	4	3	22	4	59	7	13	10	8	0	8	5	2	7	9	10	12											
5	F	12	5	45	4	56	7	15	10	35	4	12	5	0	7	12	10	40	0	58	5	3	7	8	10	46											
6	S	12	5	39	4	57	7	14	11	12	5	8	5	1	7	11	11	18	1	54	5	4	7	7	11	25											
7	S	12	5	32	4	58	7	13	11	57	6	8	5	2	7	10	morn	2	54	5	5	7	6	morn													
8	M	12	5	25	4	59	7	11	morn	7	11	5	3	7	9	0	4	3	57	5	6	7	4	0	11												
9	T	12	5	17	5	0	7	10	0	50	8	13	5	4	7	8	0	57	4	59	5	7	7	3	1	4											
10	W	12	5	9	5	1	7	9	1	47	9	11	5	5	7	6	1	54	5	57	5	8	7	1	2	0											
11	T	12	4	59	5	2	7	8	2	43	10	2	5	6	7	5	2	54	6	48	5	9	7	0	3	0											
12	F	12	4	50	5	3	7	7	rises	10	45	5	7	7	3	rises	7	31	5	10	6	59	rises														
13	S	12	4	40	5	4	7	5	7	5	11	23	5	8	7	2	7	2	8	9	5	11	6	58	6	59											
14	S	12	4	29	5	5	7	4	7	24	11	59	5	9	7	0	7	22	8	45	5	12	6	57	7	21											
15	M	12	4	17	5	6	7	2	7	43	ev. 36	5	10	6	59	7	43	9	22	5	13	6	55	7	42												
16	T	12	4	6	5	7	7	1	8	3	1	6	5	11	6	53	8	4	9	52	5	14	6	54	8	4											
17	W	12	3	53	5	8	7	0	8	23	1	41	5	12	6	57	8	25	10	27	5	15	6	53	8	27											
18	T	12	3	41	5	9	6	58	8	46	2	18	5	13	6	55	8	49	11	4	5	16	6	52	8	52											
19	F	12	3	27	5	10	6	56	9	11	2	59	5	14	6	54	9	15	11	45	5	17	6	50	9	20											
20	S	12	3	13	5	11	6	55	9	43	3	48	5	15	6	53	9	48	ev. 34	5	18	6	49	9	54												
21	S	12	2	59	5	12	6	54	10	26	4	43	5	16	6	51	10	32	1	29	5	19	6	48	10	39											
22	M	12	2	44	5	14	6	52	11	19	5	50	5	17	6	50	11	25	2	36	5	20	6	46	11	33											
23	T	12	2	29	5	15	6	51	morn	7	3	5	18	6	49	morn	3	43	5	21	6	45	morn														
24	W	12	2	13	5	16	6	49	0	26	8	16	5	19	6	47	0	32	5	2	5	21	6	43	0	39											
25	T	12	1	57	5	17	6	48	1	43	9	25	5	20	6	45	1	48	6	11	5	22	6	42	1	54											
26	F	12	1	41	5	18	6	46	3	3	10	24	5	21	6	43	3	8	7	10	5	23	6	41	3	12											
27	S	12	1	24	5	19	6	44	sets	11	11	5	22	6	41	sets	7	57	5	24	6	39	sets														
28	S	12	1	7	5	20	6	42	6	49	11	58	5	23	6	40	6	49	8	44	5	25	6	38	6	48											
29	M	12	0	50	5	21	6	41	7	15	morn	5	24	6	38	7	16	9	29	5	26	6	36	7	16												
30	T	12	0	32	5	22	6	39	7	39	0	43	5	25	6	36	7	41	10	12	5	27	6	34	7	43											
31	W	12	0	14	5	23	6	37	8	5	1	26	5	26	6	34	8	9	10	51	5	28	6	33	8	13											

result was deduced by Professor Kaiser. Professor Secchi's observations would seem to indicate that the rings, besides having a rotary motion around the planet, are also elliptical.

**THE EARTH'S HEAT.**—Experiments by Professor Smith at Edinburgh, with thermometers imbedded in the earth at varying depths, showed a gradually increasing heat of one degree Fahrenheit for every forty feet of depth; so that at two and a half miles water would boil, and at one hundred miles deep all things must be in a state of fusion.

**PERIODICAL METEORS.**—The periodical meteors of August, 1857, were studied by the orders of M. Le Verrier, the Astronomer Royal of France, from Paris and Orleans, by simultaneous observations, to ascertain their actual distance from the earth,



## MOON'S PHASES.

		Boston.		N. York.		Baltimore		Pittsbu'gh		Cincinnati	
	D	H	M	H	M	H	M	H	M	H	M
FIRST QUARTER,.....	3	11	21 e	11	9 e	10	59 e	10	45 e	10	27 e
FULL MOON,.....	12	3	47 m	3	35 m	3	25 m	3	12 m	2	54 m
LAST QUARTER,.....	19	5	30 e	5	18 e	5	8 e	4	55 e	4	37 e
NEW MOON,.....	26	9	12 m	9	0 m	8	50 m	8	37 m	8	19 m

DAY OF MONTH.	DAY OF WEEK.	CALENDAR								CALENDAR								CALENDAR								
		Shadow at the Noon mark.		For Boston, N. England, New-York State, Michigan, Wisconsin, Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, MaryPd, Virg'a, Kent'y, Miss'ri, and California.														
				Morn'g		SUN rises	SUN sets.	MOON sets	H. W. Bost.	SUN rises	SUN sets.	MOON sets	H. W. N. Y.	SUN rises	SUN sets.	MOON sets										
		H	M	S	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M
1	T	11	59	55	5	24	6	36	8	34	2	5	5	27	6	33	8	38	11	39	5	29	6	31	8	44
2	F	11	59	36	5	26	6	35	9	10	2	54	5	28	6	32	9	16	morn	5	30	6	30	9	22	
3	S	11	59	17	5	27	6	33	9	53	3	45	5	29	6	30	9	59	0	31	5	31	6	28	10	6
4	S	11	58	58	5	28	6	31	10	41	4	42	5	30	6	29	10	48	1	28	5	32	6	27	10	55
5	M	11	58	38	5	29	6	30	11	39	5	45	5	31	6	27	11	45	2	31	5	33	6	25	11	52
6	T	11	58	18	5	30	6	28	morn	6	46	5	32	5	26	morn	3	32	5	34	6	24	morn			
7	W	11	57	58	5	31	6	26	0	41	7	46	5	33	6	24	0	47	4	32	5	35	6	23	0	53
8	T	11	57	38	5	32	6	25	1	43	8	43	5	34	6	23	1	48	5	29	5	35	6	21	1	53
9	F	11	57	17	5	33	6	23	2	48	9	30	5	35	6	21	2	51	6	16	5	36	6	20	2	55
10	S	11	56	56	5	34	6	21	3	50	10	13	5	36	6	19	3	52	6	59	5	37	6	18	3	55
11	S	11	56	36	5	35	6	19	rises	10	51	5	36	6	18	rises	7	37	5	38	6	17	rises			
12	M	11	56	15	5	36	6	17	6	10	11	24	5	37	6	16	6	10	8	10	5	39	6	15	6	11
13	T	11	55	54	5	37	6	16	6	28	11	59	5	38	6	14	6	30	8	45	5	40	6	13	6	31
14	W	11	55	32	5	38	6	14	6	50	ev.	37	5	39	6	12	6	53	9	23	5	40	6	12	6	56
15	T	11	55	11	5	39	6	12	7	15	1	12	5	40	6	10	7	19	9	58	5	41	6	10	7	23
16	F	11	54	50	5	40	6	11	7	46	1	52	5	41	6	8	7	51	10	38	5	42	6	9	7	56
17	S	11	54	28	5	41	6	9	8	24	2	35	5	42	6	7	8	30	11	21	5	43	6	7	8	36
18	S	11	54	8	5	42	6	7	9	14	3	30	5	43	6	5	9	21	ev.	16	5	44	6	5	9	28
19	M	11	53	47	5	43	6	5	10	14	4	31	5	44	6	4	10	21	1	17	5	44	6	4	10	28
20	T	11	53	25	5	44	6	4	11	22	5	42	5	45	6	2	11	28	2	28	5	45	6	2	11	34
21	W	11	53	4	5	45	6	2	morn	6	54	5	46	6	1	morn	3	39	5	46	6	1	morn			
22	T	11	52	44	5	46	6	0	0	40	8	2	5	47	5	59	0	45	4	48	5	47	5	59	0	51
23	F	11	52	23	5	47	5	58	1	59	9	5	5	48	5	57	2	3	5	51	5	48	5	57	2	7
24	S	11	52	2	5	48	5	56	3	19	10	0	5	49	5	55	3	22	6	46	5	49	5	55	3	24
25	S	11	51	42	5	49	5	54	sets	10	47	5	50	5	53	sets	7	33	5	50	5	53	sets			
26	M	11	51	21	5	50	5	52	5	38	11	26	5	51	5	52	5	39	8	12	5	51	5	52	5	41
27	T	11	51	1	5	51	5	50	6	3	morn	5	52	5	50	6	6	8	59	5	52	5	51	6	9	
28	W	11	50	41	5	53	5	49	6	33	0	13	5	53	5	49	6	37	9	44	5	53	5	49	6	42
29	T	11	50	22	5	54	5	46	7	6	0	58	5	54	5	47	7	11	10	27	5	54	5	47	7	17
30	F	11	50	2	5	55	5	45	7	46	1	41	5	55	5	45	7	53	11	14	5	55	5	45	7	59

by calculating the angles at which they appeared to the two observers. But out of about sixty seen, Mr. Liats, who discussed the results, could be certain of only six being the same stars seen by both. These six stars, at the moment of appearing and disappearing, were calculated to be distant from the earth as follows:

No. 1,	35,000—	11,000 metres, equal to 23.7 miles.
No. 2,	36,000—	25,000 " " 24.17 "
No. 3,	31,000—	21,000 " " 20.14 "
No. 4,	37,000—	25,000 " " 25.3 "
No. 5,	83,000—	13,000 " " 55.9 "
No. 6,	119,000—	66,000 " " 79.44 "

and their rapidity, as 14, 14, 16, 17, 55, and 75 miles per second, which affords the curious coincidence (for in the very imperfect state of our knowledge about these mysterious visitants this fact is little more) that the highest were the swiftest.

MOON'S PHASES.		Boston.		N. York.		Baltimore		Pittsburgh		Cincinnati	
	D	H	M	H	M	H	M	H	M	H	M
FIRST QUARTER,.....	3	3	48 e	3	36 e	3	26 e	3	14 e	2	54 e
FULL MOON,.....	11	7	8 e	6	56 e	6	46 e	6	33 e	6	14 e
LAST QUARTER,.....	19	0	59 m	0	47 m	0	37 m	0	24 m	0	5 e
NEW MOON,.....	25	7	49 e	7	37 e	7	27 e	7	15 e	6	56 e

DAY OF MONTH.	DAY OF WEEK	CALENDAR								CALENDAR				CALENDAR			
		Shadow at the Noon mark.		For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.						For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, Mary'd, Virga, Kent'y, Miss'ri, and California.			
				SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.			
		Morning.															
		H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	S	11 49 43	5 56	5 43	8 34	2 28	5 56	5 43	8 41	morn	5 56	5 44	8 48				
2	M	11 49 24	5 57	5 42	9 30	3 22	5 57	5 42	9 36	0 8	5 57	5 42	9 43				
3	M	11 49 5	5 58	5 40	10 30	4 18	5 58	5 41	10 36	1 4	5 58	5 41	10 42				
4	T	11 48 47	5 59	5 39	11 35	5 15	5 59	5 39	11 40	2 1	5 59	5 39	11 45				
5	W	11 48 29	6 1	5 38	morn	6 17	6 0	5 37	morn	3 3	6 0	5 38	morn				
6	T	11 48 11	6 2	5 36	0 36	7 12	6 1	5 36	0 40	3 58	6 1	5 37	0 44				
7	F	11 47 54	6 3	5 34	1 39	8 2	6 2	5 34	1 42	4 48	6 2	5 35	1 46				
8	S	11 47 37	6 4	5 33	2 40	8 49	6 3	5 33	2 42	5 35	6 3	5 34	2 44				
9	S	11 47 21	6 5	5 31	3 44	9 32	6 4	5 31	3 44	6 15	6 4	5 32	3 45				
10	M	11 47 4	6 6	5 29	4 45	10 12	6 5	5 29	4 44	6 5	6 5	5 31	4 44				
11	T	11 46 49	6 8	5 28	rises	10 51	6 6	5 28	rises	7 37	6 6	5 30	rises				
12	W	11 46 34	6 9	5 26	5 19	11 24	6 7	5 26	5 23	8 10	6 7	5 29	5 27				
13	T	11 46 19	6 10	5 24	5 49	ev. 7	6 8	5 25	5 54	8 53	6 8	5 27	5 59				
14	F	11 46 5	6 11	5 22	6 24	0 50	6 9	5 23	6 30	9 36	6 9	5 25	6 36				
15	S	11 45 52	6 12	5 20	7 8	1 35	6 10	5 22	7 15	10 21	6 10	5 24	7 22				
16	S	11 45 39	6 13	5 19	8 6	2 25	6 11	5 20	8 13	11 11	6 11	5 22	8 20				
17	M	11 45 26	6 14	5 17	9 14	3 23	6 12	5 19	9 20	ev. 9	6 12	5 20	9 27				
18	T	11 45 15	6 15	5 16	10 27	4 26	6 13	5 17	10 32	1 12	6 13	5 19	10 38				
19	W	11 45 4	6 17	5 14	11 43	5 31	6 14	5 16	11 47	2 17	6 14	5 17	11 52				
20	T	11 44 53	6 18	5 13	morn	6 37	6 15	5 15	morn	3 23	6 15	5 16	morn				
21	F	11 44 43	6 19	5 11	1 1	7 39	6 16	5 13	1 4	4 25	6 16	5 15	1 6				
22	S	11 44 34	6 21	5 10	2 16	8 38	6 18	5 12	2 18	5 24	6 17	5 14	2 19				
23	S	11 44 26	6 22	5 8	3 31	9 29	6 19	5 10	3 31	6 15	6 18	5 13	3 31				
24	M	11 44 18	6 23	5 7	4 46	10 18	6 20	5 8	4 44	7 4	6 19	5 12	4 43				
25	T	11 44 11	6 24	5 5	sets	11 0	6 21	5 7	sets	7 46	6 20	5 10	sets				
26	W	11 44 5	6 25	5 4	5 1	11 45	6 22	5 5	5 6	8 32	6 21	5 9	5 11				
27	T	11 43 59	6 27	5 2	5 39	morn	6 24	5 4	5 45	9 22	6 22	5 7	5 51				
28	F	11 43 54	6 28	5 1	6 25	0 36	6 25	5 3	6 31	10 9	6 23	5 5	6 38				
29	S	11 43 50	6 29	5 0	7 18	1 23	6 26	5 2	7 25	10 53	6 24	5 4	7 32				
30	S	11 43 47	6 31	4 58	8 17	2 7	6 27	5 0	8 24	11 44	6 25	5 3	8 30				
31	M	11 43 45	6 32	4 57	9 21	2 58	6 28	4 59	9 26	morn	6 26	5 2	9 32				

In 1839 De Vico, at Rome, and Nobile, at Naples, made simultaneous observations of this sort in the nights of the 23d, 24th, 25th, and 31st of August, and saw the same meteor thirty-one times, and so exact were the results that they served as well as the best ordinary methods for correcting the difference of longitude of those places forty-three leagues apart, while Paris is only twenty-eight leagues from Orleans.

**SPOTS ON THE SURFACE OF THE SUN.**—The Royal Astronomical Society, G. B., have recently presented their medal to Mr. Heinrich Schwabe of Dessau, Germany, for his researches, continued for a period of thirty years, on the spots which appear on the surface of the sun. From the address of the president, in presenting the medal, we derive the following information on this topic:

The plan adopted by Mr. Schwabe is, to note by a number each spot in the order of its appearance, carrying on his notation from the first to the last spot in each year.



MOON'S PHASES.	D	Boston.		N. York.		Baltimore		Pittsburgh		Cincinnati	
		H	M	H	M	H	M	H	M	H	M
FIRST QUARTER,.....	2	11	34 m	11	22 m	11	12 m	10	59 m	10	41 m
FULL MOON,.....	10	9	21 m	9	9 m	8	59 m	8	47 m	8	28 m
LAST QUARTER,.....	17	8	23 m	8	11 m	8	1 m	7	48 m	7	29 m
NEW MOON,.....	24	8	59 m	8	47 m	8	37 m	8	25 m	8	6 m

DAY OF MONTH.	DAY OF WEEK.	Shadow at the Noon mark.	CALENDAR				CALENDAR				CALENDAR			
			For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				For Washington, Mary'ld, Virg'a, Kent'y, Miss'r'i, and California.			
			Morning	SUN rises	SUN sets.	MOON sets	H. W. Bost.	SUN rises	SUN sets.	MOON sets	H. W. N. Y.	SUN rises	SUN sets.	MOON sets
			H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	T		11 43 43	6 33	4 55	10 24	3 50	6 29	4 59	10 29	0 36	6 27	5 1	10 33
2	W		11 43 42	6 34	4 54	11 25	4 42	6 30	4 58	11 29	1 28	6 28	5 0	11 32
3	T		11 43 42	6 35	4 53	morn	5 32	6 31	4 57	morn	2 18	6 29	4 59	morn
4	F		11 43 42	6 36	4 52	0 28	6 24	6 32	4 56	0 30	3 10	6 30	4 58	0 33
5	S		11 43 44	6 37	4 50	1 29	7 12	6 33	4 55	1 30	3 58	6 31	4 57	1 31
6	S		11 43 46	6 39	4 49	2 31	8 0	6 35	4 53	2 31	4 46	6 32	4 56	2 31
7	M		11 43 49	6 40	4 48	3 34	8 47	6 36	4 52	3 32	5 33	6 33	4 55	3 31
8	T		11 43 53	6 41	4 47	4 39	9 31	6 38	4 50	4 36	6 17	6 35	4 54	4 34
9	W		11 43 57	6 43	4 45	rises	10 16	6 39	4 49	rises	7 2	6 36	4 53	rises
10	T		11 44 3	6 44	4 44	4 21	11 0	6 40	4 48	4 26	7 46	6 37	4 52	4 32
11	F		11 44 9	6 45	4 43	5 5	11 44	6 41	4 47	5 12	8 30	6 39	4 51	5 18
12	S		11 44 17	6 47	4 42	6 0	ev. 38	6 43	4 46	6 6	9 24	6 40	4 50	6 13
13	S		11 44 25	6 48	4 41	7 5	1 28	6 44	4 45	7 11	10 14	6 41	4 49	7 18
14	M		11 44 34	6 49	4 40	8 17	2 19	6 45	4 44	8 23	11 5	6 42	4 48	8 29
15	T		11 44 43	6 51	4 39	9 31	3 16	6 47	4 43	9 36	ev. 2	6 43	4 47	9 41
16	W		11 44 54	6 52	4 38	10 50	4 13	6 48	4 42	10 53	0 59	6 44	4 46	10 56
17	T		11 45 6	6 53	4 37	morn	5 11	6 49	4 41	morn	1 57	6 45	4 46	morn
18	F		11 45 18	6 54	4 36	0 5	6 10	6 50	4 40	0 6	2 56	6 46	4 45	0 8
19	S		11 45 31	6 55	4 36	1 19	7 7	6 51	4 40	1 19	3 53	6 47	4 44	1 20
20	S		11 45 45	6 56	4 35	2 30	8 5	6 52	4 39	2 29	4 51	6 48	4 44	2 28
21	M		11 46 0	6 58	4 34	3 42	8 59	6 54	4 38	3 40	5 45	6 49	4 43	3 37
22	T		11 46 16	6 59	4 33	4 54	9 51	6 55	4 38	4 51	6 37	6 50	4 42	4 47
23	W		11 46 33	7 0	4 33	sets	10 40	6 56	4 37	sets	7 26	6 51	4 42	sets
24	T		11 46 50	7 1	4 32	4 17	11 24	6 57	4 36	4 23	8 10	6 52	4 41	4 30
25	F		11 47 8	7 3	4 31	5 8	morn	6 58	4 36	5 14	9 3	6 53	4 41	5 21
26	S		11 47 27	7 4	4 31	6 5	0 17	6 59	4 35	6 11	9 50	6 54	4 41	6 18
27	S		11 47 47	7 5	4 30	6 56	1 4	7 0	4 35	7 2	10 31	6 55	4 41	7 8
28	M		11 48 7	7 6	4 29	8 11	1 48	7 1	4 35	8 15	11 16	6 56	4 40	8 21
29	T		11 48 28	7 7	4 29	9 14	2 30	7 2	4 34	9 18	morn	6 57	4 40	9 22
30	W		11 48 49	7 9	4 29	10 16	3 16	7 4	4 34	10 18	0 2	6 58	4 40	10 21

He reckons an isolated spot, or a cluster of spots where there is no visible separation between their penumbrae, as one group. Hence, he observes, the number of spots will depend in a great measure on the excellence of the telescope; and it often happens that clusters of many hundred, nay, of many thousand spots, will be designated by one number only, just as a single isolated spot will be. So great, however, is the sun's tendency to present his spots in the form of clusters, that other observers will, in the course of a year, assuredly not find any great difference between their numbers and mine. But he particularly impresses on his readers, that he attaches importance not so much on the absolute number of the groups, as on the ratio which obtains between them in different years.

The result of his investigations has been to establish with a degree of probability, almost amounting to certainty, that the solar spots pass through the phases of maxi-

MOON'S PHASES.	D	Boston.		N. York.		Baltimore		Pittsbu'gh		Cincinnati	
		H	M	H	M	H	M	H	M	H	M
FIRST QUARTER,.....	2	9	6 m	8	54 m	8	44 m	8	31 m	8	12 m
FULL MOON,.....	9	10	29 e	10	17 e	10	7 e	9	54 e	9	35 e
LAST QUARTER, .....	16	4	32 e	4	20 e	4	10 e	3	57 e	3	39 e
NEW MOON,.....	24	1	3 m	0	51 m	0	41 m	0	28 m	0	10 m

DAY OF MONTH.	DAY OF WEEK.	Shadow at the Noon mark.	CALENDAR				CALENDAR				CALENDAR			
			For Boston, N. England, New-York State, Michigan, Wiscon., Iowa and Oregon.				For N. York City, Philadelphia, Conn., New Jersey, Penna., Ohio, Indiana and Illinois.				For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.			
			SUN rises	SUN sets.	MOON sets	H. W. Bost.	SUN rises	SUN sets.	MOON sets	H. W. N. Y.	SUN rises	SUN sets.	MOON sets	
		Morning	H M S	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
1	T	11 49 12	7 10 4	29	11 17	4 0	7 5 4	34	11 19	0 46	6 59 4	40	11 20	
2	F	11 49 35	7 11 4	29	morn	4 44	7 6 4	34	morn	1 30	7 0 4	39	morn	
3	S	11 49 58	7 12 4	28	0 18	5 30	7 7 4	34	0 18	2 16	7 1 4	39	0 19	
4	S	11 50 22	7 13 4	28	1 19	6 19	7 8 4	33	1 18	3 5	7 2 4	39	1 18	
5	M	11 50 47	7 14 4	28	2 21	7 6	7 9 4	33	2 19	3 52	7 3 4	38	2 17	
6	T	11 51 13	7 15 4	28	3 28	7 58	7 10 4	33	3 24	4 44	7 4 4	38	3 21	
7	W	11 51 38	7 16 4	28	4 37	8 52	7 11 4	33	4 32	5 38	7 5 4	38	4 28	
8	T	11 52 4	7 17 4	28	5 48	9 47	7 12 4	33	5 43	6 33	7 6 4	38	5 37	
9	F	11 52 31	7 18 4	28	rises	10 39	7 13 4	33	rises	7 25	7 7 4	38	rises	
10	S	11 52 58	7 19 4	28	4 48	11 29	7 14 4	33	4 55	8 15	7 8 4	38	5 2	
11	S	11 53 25	7 20 4	28	6 1	ev. 27	7 15 4	33	6 7	9 13	7 9 4	38	6 13	
12	M	11 53 53	7 21 4	28	7 21	1 21	7 15 4	33	7 26	10 7	7 10 4	39	7 30	
13	T	11 54 21	7 22 4	28	8 40	2 8	7 16 4	33	8 43	10 54	7 10 4	39	8 47	
14	W	11 54 50	7 22 4	28	9 55	3 0	7 17 4	34	9 57	11 46	7 11 4	39	9 59	
15	T	11 55 19	7 23 4	28	11 8	3 51	7 17 4	34	11 9	ev. 37	7 11 4	39	11 10	
16	F	11 55 48	7 24 4	28	morn	4 44	7 18 4	34	morn	1 30	7 12 4	39	morn	
17	S	11 56 17	7 24 4	29	0 21	5 39	7 18 4	34	0 20	2 25	7 12 4	40	0 20	
18	S	11 56 47	7 25 4	29	1 33	6 34	7 19 4	35	1 31	3 20	7 13 4	40	1 29	
19	M	11 57 17	7 25 4	29	2 45	7 35	7 19 4	35	2 41	4 21	7 13 4	40	2 38	
20	T	11 57 47	7 26 4	30	3 56	8 31	7 20 4	36	3 51	5 17	7 14 4	41	3 46	
21	W	11 58 17	7 26 4	30	5 5	9 28	7 20 4	36	4 59	6 15	7 14 4	41	4 54	
22	T	11 58 47	7 27 4	31	6 14	10 24	7 21 4	37	6 7	7 10	7 15 4	42	6 0	
23	F	11 59 17	7 27 4	31	sets	11 10	7 21 4	37	sets	7 56	7 15 4	42	sets	
24	S	11 59 47	7 28 4	32	4 54	11 57	7 22 4	38	4 59	8 43	7 16 4	43	5 5	
25	S	afternoon.	7 28 4	32	5 56	morn	7 22 4	38	6 1	9 29	7 16 4	43	6 7	
26	M	12 0 47	7 29 4	33	7 2	0 43	7 23 4	39	7 6	10 10	7 17 4	44	7 11	
27	T	12 1 17	7 29 4	34	8 4	1 24	7 23 4	39	8 7	10 45	7 17 4	45	8 10	
28	W	12 1 47	7 29 4	34	9 5	1 59	7 24 4	40	9 7	11 22	7 18 4	45	9 9	
29	T	12 2 16	7 29 4	35	10 5	2 36	7 24 4	40	10 6	morn	7 18 4	46	10 7	
30	F	12 2 45	7 30 4	36	11 6	3 16	7 25 4	41	11 6	0 2	7 19 4	47	11 6	
31	S	12 3 14	7 30 4	37	morn	3 56	7 25 4	42	morn	0 42	7 19 4	48	morn	

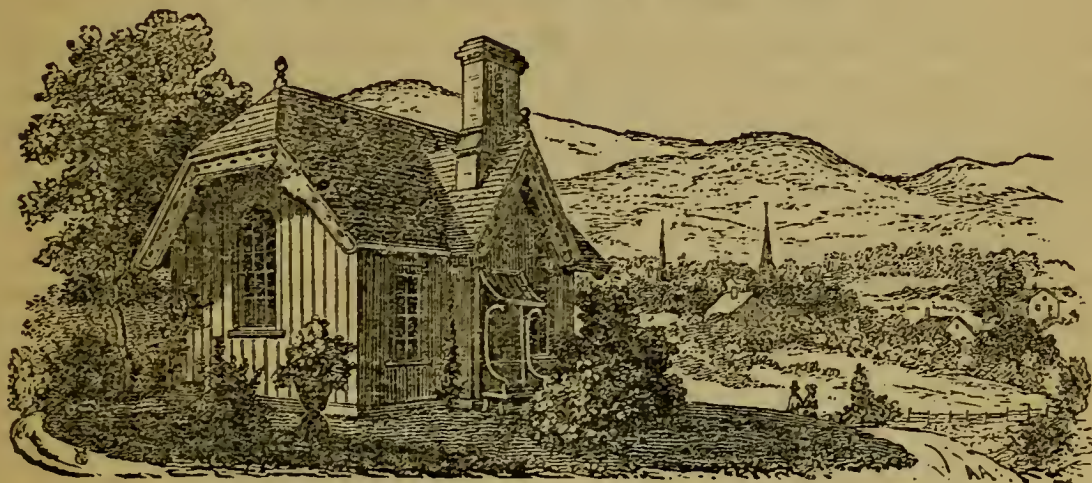
mum and minimum frequency, and *vice versa*, in a period not very different from ten years.

**BRORSEN'S COMET.**—A comet discovered by Bruhn of Berlin, during the past year, has acquired an unusual interest, from the fact that its identity with a comet discovered by Brorsen of Kiel, has been satisfactorily proved, and its time of rotation about the sun determined. This amounts to a period of 2,026 days, (five years six and a half months,) and the greatest axis of the line of rotation is about 600,000,000 miles long. This is the third comet of short rotation known to us, the two others being those of Biela and Encke.

**LIGHT-HOUSES.**—The U. S. light-house department includes (1858) 579 light-house and light-vessel stations, and 627 lights—also about 5,000 buoys and beacons.



THE  
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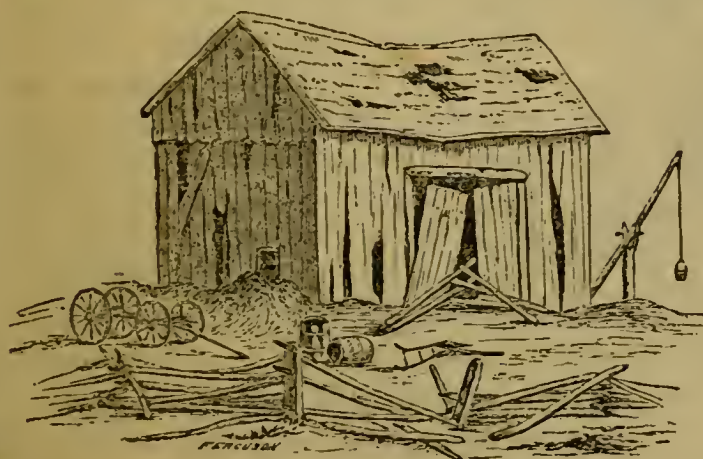
FARM MANAGEMENT.



It is an interesting subject for inquiry, why different men with the same opportunities, variously fail or succeed, after years of equal labor. One will become rich, the other poor, on the same piece of land. One has had continued prosperity, and doubled or tripled his capital. The other has met with nothing but difficulty, misfortune, and "hard times." Instead of increasing his capital, he has become heavily involved in debt. His farm has run down and diminished in value. Altogether, he has come to the conclusion, that except with a *lucky few*, farming is a very hard,

slavish, non-paying occupation.

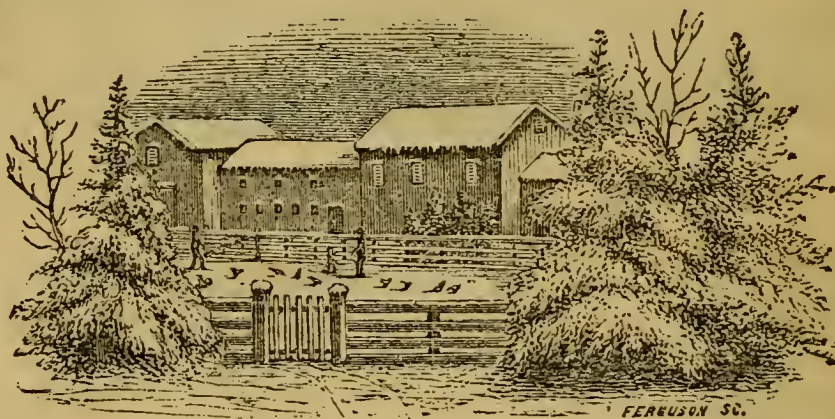
His successful neighbor on the other hand, has adopted a very different opinion. His crops are good, with scarcely an exception—his fences impenetrable—his fields without a weed—his farm-buildings and barn-yards, models of neatness—his cattle and sheep richly



SQUIRE SLIPSHOD'S BARN.

marked with improved blood, in fine condition, and eagerly sought in market at high prices—his fruit trees are bending under their rich loads, and his dwelling and door-yard a gem of rural beauty. He has “not quite yet” concluded to give up the business of agriculture for feverish speculation, nor for the close, pent-up, and anxious life of city trade.

There is no lack of examples of both of these kinds of farming. The writer knows two men, now under fifty, who began active life in farming at about the same period—the first with very little property, the other with a beautiful hundred-acre farm. The first in less than twenty years had accumulated enough to buy seven hundred acres of the best land in that fertile region, and his average nett profits were between four and five thousand dollars a year. The other, with the fine hundred-acre patrimony, has worked equally hard, but he had not an acre left him, and was insolvent.



FARMER THRIFTY'S BARN, AS SEEN IN WINTER FROM HIS BACK DOOR.

Nearly all our readers are acquainted with two similar cases—those of *Farmer Thrifty* and *Squire Slipshod*. They will therefore recognize at once some of the accompanying roughly sketched portraits. Squire



THE SQUIRE'S DOOR-YARD GATE.

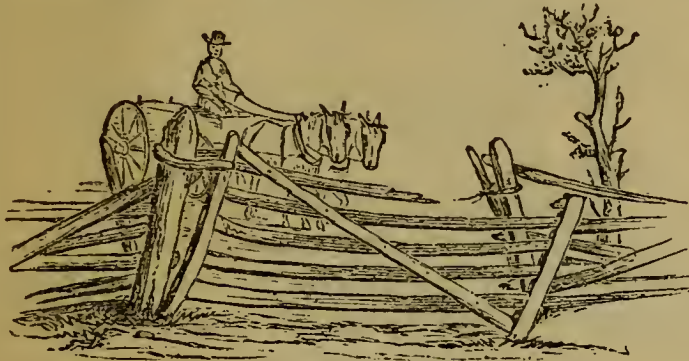
Slipshod's barn was originally the best in the neighborhood, but motives of economy have compelled him to omit some repairs he would have otherwise been glad to make—and he has become disheartened since he has discovered that boards and shingles become detached more easily than from the buildings of his neighbors. He has

adopted a cheap fastening to his barn-doors, which, from its security, compels him to leave his wagons and tools outside. He especially wonders why Farmer Thrifty's barn and fence “keeps in such good order.”

The Squire's door-yard gate is the best gate on his premises; although the hinges are a little imperfect, causing it to diverge from the post at

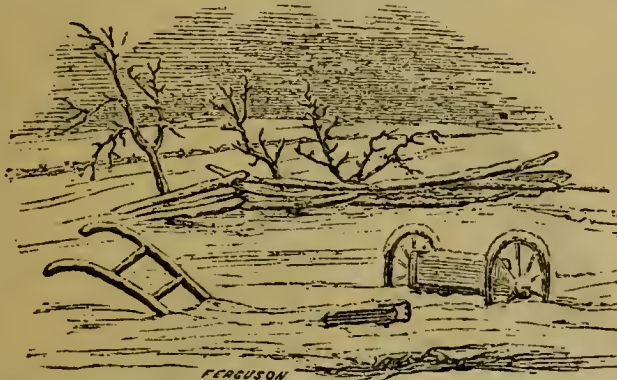


the bottom—the only inconvenience of which results from the street pigs, which are constantly thrusting themselves through. The carriage-gate



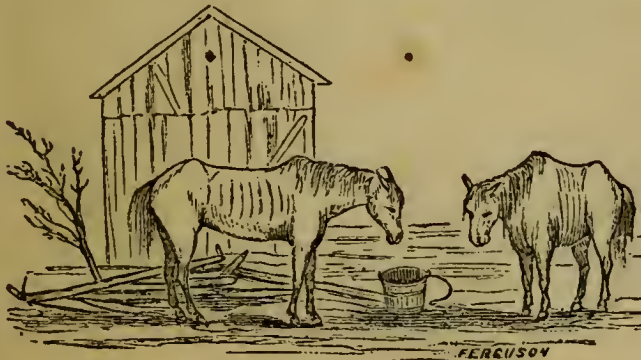
CARRIAGE GATE.

The Squire will not admit that his favorite horses are in any respect inferior to others, except it be that Farmer Thrifty's are a little fatter—



THE SQUIRE'S MODE OF WINTERING TOOLS AND IMPLEMENTS.

which advantage is more than balanced by the high feeding and pampered keeping which the former has to give his team. On two points he confesses to have been unlucky. One is in his young orchard, which has never flourished so well as that of his more successful neighbor, but he will not believe that this difference arises from anything else than *luck*, although he never gives his orchard any cultivation. Raising *pears* he regards as a humbug, as such varieties as *he* has planted, with his peculiar management, which he thinks "good enough," has given him specimens like this—(see fig. 9.) He



THE SQUIRE'S HORSES.



FARMER THRIFTY'S TEAM.

cannot, however, account for the good luck of his neighbor, whose entire crop was similar to fig. 10.



THE SQUIRE'S YOUNG ORCHARD.



FARMER THRIFTY'S YOUNG ORCHARD.

The other point in which he admits his inferiority, is in his corn crop, from which, although his land is comparatively fertile, he obtains only about ten bushels of corn per acre, while the Farmer usually gets from fifty to seventy.

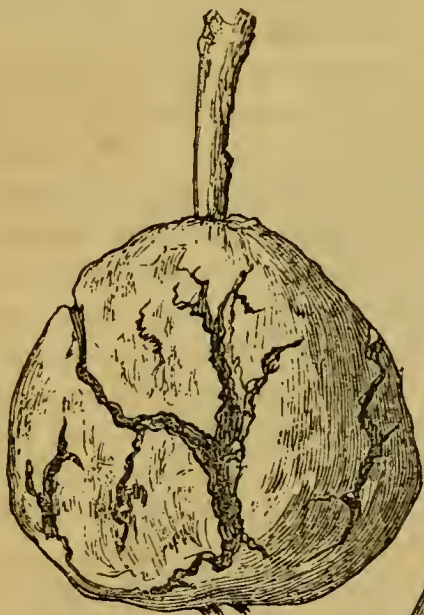


Fig. 9.

Now, the question very properly occurs, what should cause so great a difference in the farming of two neighbors—one always prosperous, the other as uniformly unsuccessful. The answer is an interesting and important one, namely, *difference in management*. It is not the amount of labor

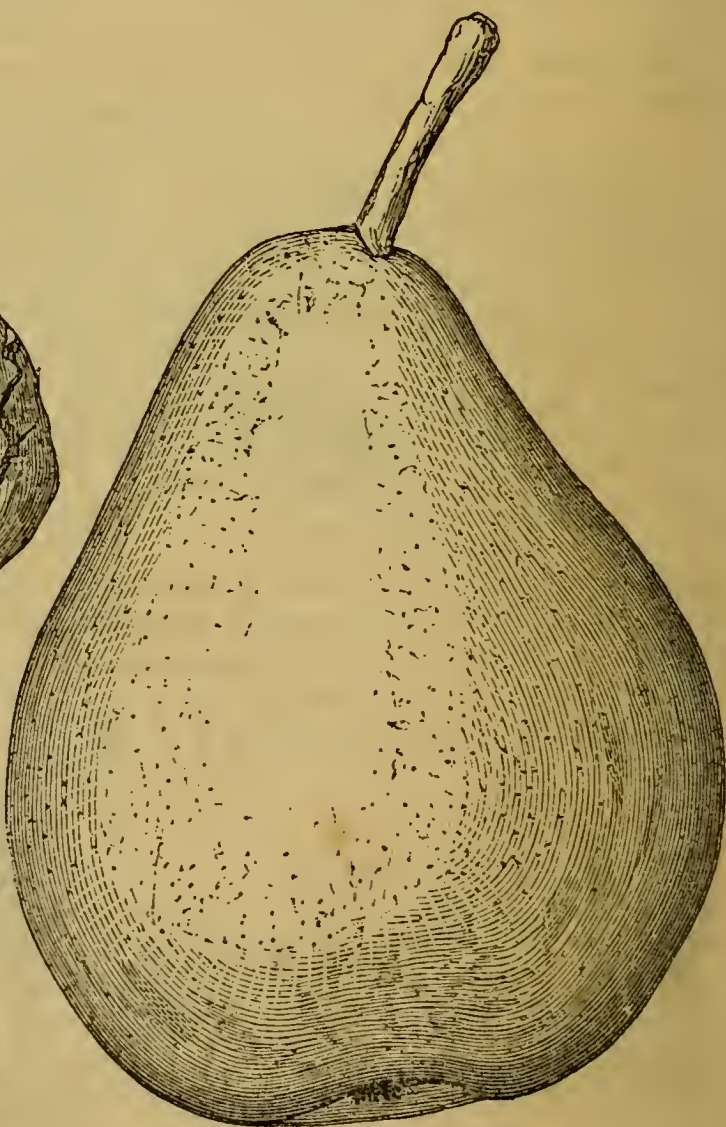


Fig. 10.

expended, but the way in which this labor is directed. A man may work hard for days together, in carrying a hogshead of water, by repeated journeys, in an egg shell; or by efficient appliances it may be conveyed



the same distance in a few minutes. One may fatigue himself to no purpose by taking hold of the wrong end of the lever, while its proper use may overcome any resistance. It is this bad application of labor that



THE SQUIRE "UNLUCKY" WITH HIS CORN CROP.

causes heavy loss to hard-working, badly managing farmers. It is the object of these remarks to point out the causes of failure, and the requisites for success.

ORDER.—The good performance of a single operation, does not constitute a successful farmer. If he raises a hundred bushels of corn per acre,



THE FARMER'S CORN.

while his other crops do not pay cost; or if he sells a young colt for two hundred dollars, and sinks five hundred on other animals, he is a poor manager. The perfection of the art requires a skillful attention to *every part*—a proper arrangement of *the whole*. Everything must be done, not only in the best manner, and at the proper time, but with the most effective and economical

expenditure of money. All must move on with clock-work regularity, without hurry or confusion, even at the most busy seasons of the year. A comprehensive plan of the whole business must be devised. In maturing such a plan, several important branches of the subject are to be carefully examined, under the various heads of Capital, Laying Out the Farm, Buildings, Choice of Implements, Selection of Animals, Rotation of Crops, and arrangement of operations in the Order of Time.

CAPITAL.—The first requisite in all undertakings of magnitude, is to "count the cost." The man who commences a building, which to finish would cost ten thousand dollars, with a capital of only five thousand, is

as certainly ruined, as many farmers are, who, without counting the cost, commence on a scale to which their limited means are wholly inadequate. One of the greatest mistakes which young farmers make in this country, in their anxious wish for large possessions, is not only in purchasing more land than they can pay for, but in the actual expenditure of all their means, without leaving any even to *begin* the great work of farming. Hence, the farm continues for a long series of years poorly provided with stock, with implements, with manure, and with the necessary labor. From this heavy drawback on the profits of his land, the farmer is kept long in debt; the burthen of which not only disheartens him, but prevents that enterprise and energy which are essential to success. This is one fruitful reason why American agriculture is in many places in so low a state. A close observer, in traveling through the country, is thus enabled often to decide from the appearances of the buildings and premises of each occupant, whether he is in or out of debt.

In England—where the enormous taxes of different kinds, imperiously compel the cultivator to farm well, or not farm at all—the indispensable necessity of a heavy capital to begin with, is fully understood. The man who merely *rents* a farm there, must possess as much to stock it and commence operations, as the man who *buys* and pays for a farm of equal size in the best parts of western New-York. The result is, that he is enabled to do everything in the best manner; he is not compelled to bring his goods prematurely to market, to supply his pressing wants; and by having ready money always at command, he can perform every operation at the very best season for product and economy, and make purchases, when necessary, at the most advantageous rate. The English farmer is thus able to pay an amount of tax, often more than the whole product of farms of equal extent in this country.

The importance of possessing the means of doing everything at exactly the right season, cannot be too highly appreciated. One or two illustrations may set this in a clearer light. Two farmers had each a crop of rutabagas, of an acre each. The first, by hoeing his crop early, while the weeds were only an inch high, accomplished the task with two days work, and the young plants then grew vigorously and yielded a heavy return. The second, being prevented by a deficiency of help, had to defer his hoeing one week, and then three days more, by rainy weather, making ten days in all. During this time the weeds had sprung up six to ten inches high, so as to require, instead of two days, no less than six days to hoe them; and so much was the growth of the crop checked at this early stage, that the owner had 150 bushels less on his acre, than the farmer who took time by the forelock. Another instance occurred with an intelligent farmer of this State, who raised two fields of oats on land of similar quality. One field was sown very early and well put in, and yielded a good profit. The other was delayed twelve days, and then



hurried; and although the crop was within two-thirds of the amount of the former, yet that difference was just the clear profit of the first crop; so that with the latter, the amount yielded only paid the expenses.

Admitting that the farm is already purchased and paid for, it becomes an object to know what else is needed, and at what cost, before cultivation is commenced. If the buildings and fences are what they should be, which is not often the case, little immediate outlay will be needed for them. But if not, then an estimate must be made of the intended improvements and the necessary sum allotted for them. These being all in order, the following items, requiring an expenditure of capital, will be required on a good farm of 100 acres of improved land, that being not far from the size of a large majority in this State. The estimate will of course vary considerably with circumstances, prices, &c.

**LIVE STOCK.**—This will vary much with the character and quality of the land, its connection with market, &c., but the following is a fair average, for fertile land, and the prices an average for different years, although lower than they have recently been:—

3 horses, at \$100, \$300—1 yoke of oxen, \$100,.....	\$400
8 milch cows, \$25, \$200—10 steers, heifers and calves, \$100,.....	300
20 pigs, \$5, \$100—100 sheep, \$2, \$200,.....	300
Poultry, &c., .....	10
	<hr/> \$1010

**IMPLEMENTS.**—To farm *economically*, these must be of the best sort, especially those that are daily used. A plow, for instance, that saves only *one-eighth* of a team's strength, will save an hour a day, or more than *twelve* days (worth \$24,) in a hundred—an amount, annually, that would be well worth paying freely for in the best plow. A simple hand-hoe,—so well made that it shall enable the laborer to do one hour's more work daily, will save twelve days in a hundred,—enough to pay for many of the best made implements of the kind. These examples are sufficient to show the importance of securing the best.

2 plows fitted for work, and 1 small do., \$25—1 cultivator, \$7, ....	\$32.00
1 harrow, \$10—1 roller, \$10—1 seed planter, \$15, .....	35.00
1 fanning mill, 1 straw cutter, \$40—1 root slicer, \$28,.....	68.00
1 farm wagon, 1 ox-cart, one-horse cart, with hay-racks, &c.,.....	180.00
Harness for three horses, .....	50.00
1 shovel, 1 spade, 2 manure-forks, 3 hay-forks, 1 pointed shovel, 1 grain shovel, 1 pick, 1 hammer, 1 wood saw, 1 turnip-hook, 2 ladders, 2 sheep-shears, 2 steelyards, (large and small,) 1 half-bushel measure, each \$1,.....	20.00
1 horse-rake, \$8—2 grain-cradles, 2 scythes, \$12,.....	20.00
1 wheelbarrow, \$5—1 maul and wedges, 2 axes, \$6.50,.....	11.50
1 hay-knife, 1 ox-chain,.....	6.00
1 tape line, for measuring fields and crops,.....	2.00
1 grindstone, \$3—1 crowbar, \$2—1 sled and fixtures, \$30,.....	35.00
Hand-hoes, hand-rakes, baskets, stable lantern, currycomb and brush, grain-bags, &c., say.....	15.00
	<hr/> \$474.50

The addition of a subsoil plow, sowing machine, mower and reaper, threshing machine, horse-power for sawing wood, cutting straw, &c.,

would more than double the amount, but young farmers may hire most of these during the earlier periods of their practice. A set of the simpler carpenter's tools, for repairing implements in rainy weather, would soon repay their cost.

Besides the preceding, the *seeds* for the various farm crops, would cost not less than \$75; hired labor for one year, to do the work well, would probably be as much as \$350; and food for maintaining all the domestic animals from the opening of spring until grass, and grain for horses till harvest, would not be less in value than \$100; \$525 in all.

For domestic animals, .....	\$1010.00
" implements, .....	474.50
" seeds, food and labor, .....	525.00
	<hr/>
	\$2009.50

Thus, two thousand dollars are required the first year for stocking and conducting satisfactorily the operations of a hundred acres of good land—a much larger sum than is commonly supposed to be necessary, but none too much for the most profitable management. If this sum cannot be had, let the farmer purchase but fifty acres, so as to leave him a larger surplus of money, that he may till his land *well*.

**SIZE OF FARMS.**—The great loss from a superficial, skimming culture, has been fully shown. Take the corn-crop as an illustration. There are many whose yearly products per acre do not exceed 25 bushels. There are others, skilled in good management, who obtain as an average, not less than 80 bushels per acre. Now observe the difference in the profits of each. The first gets 250 bushels from ten acres. In doing this, he has to plow ten acres, harrow ten acres, mark out ten acres, find seed for ten acres, plant, cultivate, hoe, and cut up ten acres, besides paying the interest and taxes on this extent of land, worth about five hundred dollars. The other cultivator gets 250 bushels from about three acres—and he only plows, plants, cultivates and hoes, this limited piece to obtain the same amount—and from the fine tilth and freedom from weeds, this is much easier done, even on an equal surface. The same reasoning applies to every part of the farm. Be sure then, to cultivate no more than can be done in the best manner, whether it be ten, fifty, or five hundred acres. Two well known neighbors owned, one four hundred, and the other seventy-five acres—yet the larger farmer admitted that he made less than his limited neighbor. There is a rule to determine the proper size for a farm, that can be scarcely ever misapplied, namely, *to reduce its dimensions until the labor expended shall perform every thing in the best manner*. If, for instance, the farmer now lays out one thousand dollars yearly on three hundred acres, and finds the sum insufficient, then dispose of such a portion as will allow the thousand dollars to accomplish the very best cultivation. This will give the greatest nett proceeds, even if it be but a hundred acres.

As an example of what may be obtained from a small piece of land,



the following products of fifty acres are given, and are not more than have been often raised separately by good farmers, with economical culture, and are much less than some premium crops obtained at higher cost:—

10 acres	wheat, 35 bushels per acre,	-----	\$350
5 "	corn, 90 " " 50c.,	-----	225
2 "	potatoes, 200 " " 35c.,	-----	140
1 "	carrots, 500 " " 15c.,	-----	75
6 "	winter apples, 200 bushels per acre, 25c.,	-----	300
6 "	hay, 3 tons per acre, \$6,	-----	108
10 "	pasture, worth	-----	60
5 "	barley, 40 bushels per acre, 50c.,	-----	100
5 "	oats, 50 " " 35c.,	-----	87

Total product of 50 acres of fine land,----- \$1445

Good land could be brought to this state of fertility, including complete underdraining and ample manuring, at less than a total cost of one hundred dollars per acre, where land is at an average price for the northern and middle States; it would then be incomparably cheaper than many poor farms at nothing; for while fifty acres could be tilled for four hundred dollars, leaving over one thousand dollars nett profits, large, poor farms, hardly pay the labor spent upon them. A proprietor of such a farm declared, "It takes me and my hired man hard at work all the year, to raise enough to pay him only."

**LAYING OUT FARMS.**—This department is very much neglected. The proper disposition of the different fields, for the sake of economy in fencing, for convenience of access, and for a full command of pasture and protection of crops at all times, has received comparatively little attention from our agricultural writers and from farmers.

Many suppose that this business is very quickly disposed of; that a very few minutes, or hours at most, will enable a man to plan the arrangement of his fields about right. But this is a great error. Even when a farm is of the simplest form, on a flat uniform piece of ground, many things are to be borne in mind in laying it out. In the first place, we all know that the *fencing* of a moderately sized farm costs many hundred dollars. It is very desirable to do it well, and use at the same time as little material as possible. To do this, much will depend on the shape of the fields. A certain length of fence will enclose more land in the form of a *square*, than in any other practicable shape. Hence fields should approach this form as nearly as possible. Again, the disposition of lanes is a matter of consequence, so as to avoid unnecessary length and fencing, and occupy the least quantity of ground.

But these rules may be materially affected by other considerations. For instance, it is very desirable that land of similar quality may be in the same enclosure. Some may be naturally too wet for anything but meadow or pasture; some may be much *lighter*, and susceptible of plowing, while others are not; some may be naturally sterile, and need unusual manuring with green crops. All these should, as far as practicable, be

included each in its own separate boundary. The situation of surface-drains, forming the boundaries of fields, may influence their shape; facilities for irrigation may have an essential bearing; convenience for watering cattle is not to be forgotten. Where, in addition to all these considerations, the land is hilly, still more care and thought is required in the subdivision, which may possibly require years of experience; but where fixed fences are once made, it is hard to remove them; hence a previous thorough examination should be made. A farm road, much used for heavy loads, should be made hard and firm, and cannot be easily altered; it should consequently be exactly in the right place, and be dry,

level and short—the shape of adjoining fields even conforming to these requisitions; but a road little used should not interfere with the outlines of fields.

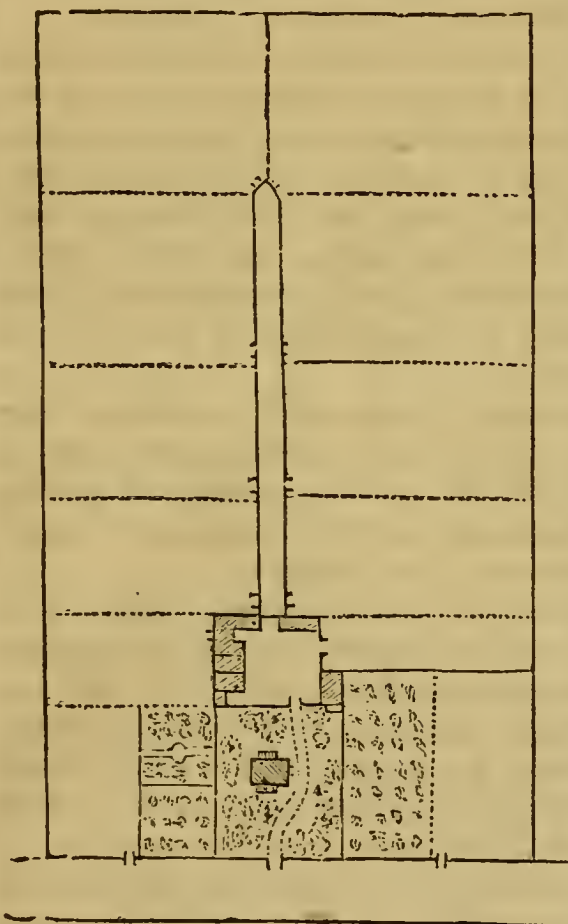


Fig. 15.

level and short—the shape of adjoining fields even conforming to these requisitions; but a road little used should not interfere with the outlines of fields. A specimen of laying out a farm is given in the annexed plan. It is of the very simplest kind, or a right-angled parallelogram, on nearly level land—a form that often occurs. It lies on one side of a public road, which is lined with forest trees. The middle enclosure on the road contains the dwelling, the barn, and other out-buildings. It is planted with trees for shade, ornament, and domestic enjoyment—not set “all in a row,” but in the graceful or picturesque style which distinguishes a beautiful natural landscape. On one side are the fruit, kitchen, and flower gardens—the lot containing them being oblong, to separate certain portions of the fruit garden for *pigs*—the sovereign remedy for the *curculio*; the orchard may occupy the opposite lot. The remainder of the farm is divided into fields nearly square, each being entered from the lane by a good gate. These fields may be increased or lessened in size without altering the position of the lane. They should always be sufficiently numerous to admit a good rotation, and to separate at all times the pasture from the tillage land.

In laying out a farm with a very uneven surface, or irregular shape, it would be best to draw, first, a plan adapted to smooth ground, as the one



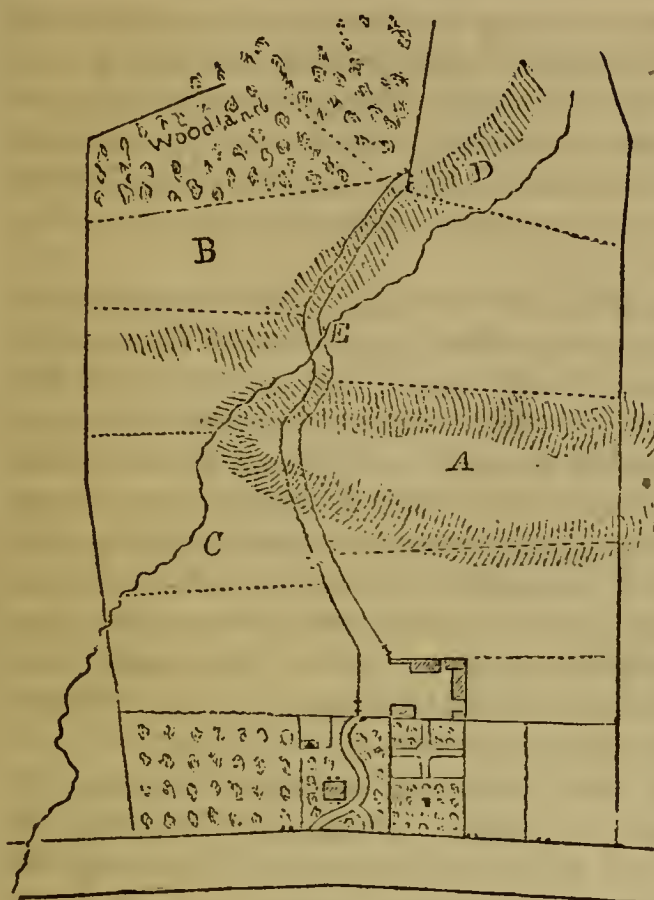


Fig. 16.

just given; and then vary the size and shape of the fields, the distance of the lane from the center, its straightness, &c., according to the circumstances of the case.

Fig. 16 exhibits an instance of modification to suit an uneven surface, where *A* is a high and broad hill, and *B* another hill stretching in an opposite direction. To avoid going over the first hill, the lane bends so as nearly to pass around it, until at *E* it crosses the valley *C D*, and then continues to rise by a gradual ascent to its termination. A bridge and embankment are made at the crossing, so as to render the road nearly level. The hill *A* is made to occupy one field, so that it may be

easily plowed by passing around it, and throwing the earth downwards.

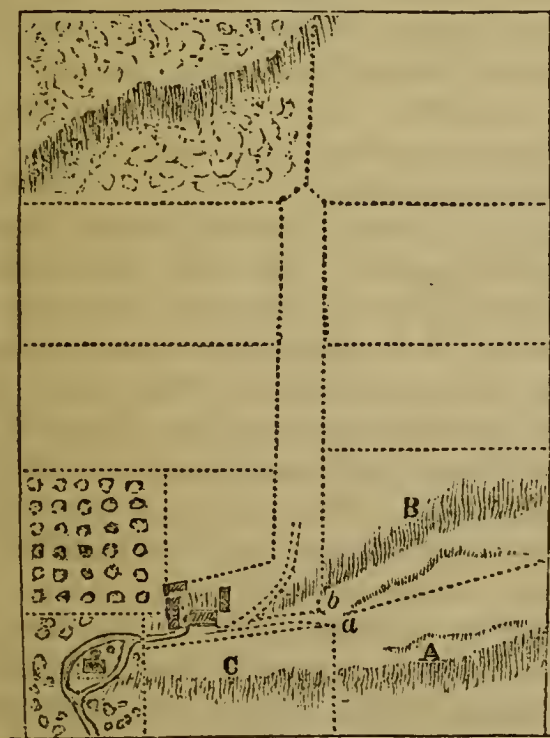


Fig. 17.

Another example is furnished by fig. 17, where a long hill or ridge lying near the public road, extends nearly its whole breadth. The house is therefore placed near the end of this hill, so that the farm road may pass around it, and the barn is nearer the center—the road rising sufficiently towards it to give all the advantages of a side-hill barn. As this hill is too large and high to plow around it, as in the last example, the fields are so divided as to be advantageously entered, and the plowing must be done with hill-side plow. The upper portion of *A* is accessible at *a*, and the lower part from the public road; *B* is entered

at *b*; and *C* is like *A*. The road from the barn to these fields being ascending, is well graded and rendered hard; and the descending road from the barn to the principal lane, is made with equal care, as most of the crops and manure pass over this portion. Some farmers, who care little for proximity to the public highway, would for convenience prefer to place the house farther back, out of sight, and nearer the center of the farm.

**FENCES.**—The kind of fence used, and the material for its construction, must depend on circumstances and localities. A good fence is always to be preferred to an imperfect one; though it cost more, it will more than save that cost, and three times the amount in vexation besides, by keeping cattle, colts, and pigs, out of fields of grain. A thriving farmer, whose whole land, except a small part with stone wall, is enclosed by common rail fence, with upright cedar stakes and connecting caps at the top, finds that it needs renewing once in six years. He accordingly divides his whole amount of fences into six parts, one of which is built new every year. All is thus kept systematically in good repair. Stone walls, if set a foot below the surface to prevent tumbling by frost, are the most durable fence. Hedges have not been sufficiently tried.

**GATES.**—Every field on the farm should be entered by a good self-shutting and self-fastening gate. A proper inclination in hanging will secure the former requisite, and a good latch, properly constructed, the latter. Each field should be numbered, and the number painted on the gate-post. Let the farmer who has *bars* instead of gates, make a trial of their comparative convenience, by taking them out and replacing them without stopping, as often as he does in one year on his farm, say about six hundred times, and he cannot fail to be satisfied which is cheapest for use.

**BUILDINGS.**—These should be as near the center of the farm as other considerations will admit. All the hay, grain, and straw, being conveyed from the fields to the barn, and most of it back again in manure, the distance of drawing should be as short as possible. This will, also, save much traveling of men and of cattle to and from the different parts of the farm. The buildings should not, however, be too remote from the public road; and a good, dry, healthy spot should be chosen. The dwelling should be comfortable, but not large—or it should, rather, be adapted to the extent of the lands. A large, costly house, with small farm and other buildings, is an indication of bad management. The censure of the old Roman should be avoided, who, having a small piece of land, built his house so large that he had less occasion to plow than to sweep.

The barn and out-buildings should be of ample extent. The barn should have space for hay, grain, and straw. It is a matter of great convenience to have the straw for littering stables, housed, and close at hand, and not out of doors, under a foot of snow. There should be plenty of stables and sheds for all domestic animals. This provision will



not only save one-third of the fodder, but stock will thrive much better. Cows will give much more milk—sheep will yield more and better wool—and all will pass through the winter more safely. The wood-house near, or attached to, the dwelling, should never be forgotten, so long as comfort in building fires, and economy in the use of fuel, are of any importance.

A small, cheap, movable horse-power, should belong to every establishment, to be used in churning, sawing wood, driving washing machine, turning grindstone, cutting straw and slicing roots.

**CHOICE OF IMPLEMENTS.**—Of those which are much used, the very best only should be procured. This will be attended with a gain every way. The work will be easier done, and it will be better done. A laborer, who by the use of a good hoe for one month, can do one-quarter more each day, saves, in the whole time, an entire week's labor.

**CHOICE OF ANIMALS.**—The best of all kinds should be selected, even if costing something more than others. Not "*fancy*" animals, but those good for use and profit. Cows should be productive of milk, and of a form adapted for beef; oxen, hardy, and fast-working; sheep, kept fine by never selling the best; swine, not the *largest* merely, but those fattening best on least food. A Berkshire or Suffolk, at 200 pounds, fattened on 10 bushels corn, is better than a "land-pike" of 300 fattened on 50 bushels.

Having now taken some notice of the necessary items for commencing farming, it remains to glance briefly at

### SOILS AND THEIR MANAGEMENT.

The chief distinction of soils, in ordinary practice, is into heavy and light, wet and dry, fertile and sterile. A volume might profitably be written on their management, but space can be afforded here for a few brief hints only.

*Heavy* (or clayey) soils are easily distinguished by their adhesiveness after rains, by cracking in drought, and by frequently presenting a cloddy surface after plowing. They are not sufficiently porous for natural drainage, but when thoroughly tile-drained, they become eminently valuable, as they retain manure better, and may be made richer than any other soil.

*Sandy* or *gravelly loams* have less strength, and may be more easily worked. They do not retain manure a long time. With a hard subsoil, they also require drainage. Sandy soils are easily tilled, but are not strong enough for most purposes, possessing too little clay to hold manure.

*Peaty* soils are generally light and free, containing large quantities of decayed vegetable matter. They are made by draining low and swampy grounds. They are fine for Indian corn, broom corn, barley, potatoes, and turnips. They are great absorbers, and great radiators of heat; hence they become warm in sunshine, and cold on clear nights. For this reason, they are peculiarly liable to frosts. Crops planted upon them must, consequently, be put in late—after spring frosts are over. Corn



should be of early varieties, that it may not only be planted late, but ripen early.

Each of these kinds of soils may be variously improved. Most of heavy soils are much improved by draining; open drains to carry off the surface water, and covered drains, that which settles beneath. An acquaintance covered a low, wet, clayey field with a net-work of underdrains, and from a production of almost nothing but grass, it yielded the first year forty bushels of wheat per acre—enough to pay the expense; and admitted of much easier tillage afterwards. Heavy soils are also made lighter and freer by manuring; by plowing under coatings of straw, rotten chips, and swamp muck; and in some rare cases, by carting on sand—though this is usually too expensive for practice. Subsoil plowing is very beneficial, both in wet seasons and in drought; the deep, loose bed of earth it makes, receiving the water in heavy rains, and throwing it off to the soil above, when needed. But a frequent repetition of the operation is needed, as the subsoil gradually settles again.

Sandy soils are improved by manuring, by the application of lime, and by frequently turning in green crops. Leached ashes have been found highly beneficial in many places. Where the subsoil is clayey, which is often the case, and especially if marly clay—great advantage is derived from shoveling it up and spreading it on the surface. A neighbor had twenty bushels of wheat per acre on land thus treated, while the rest of the field yielded only five.

**MANURES.**—These are first among the first of requisites in successful farm management. They are the strong moving power in agricultural operations. They are as the great steam engine which drives the vessel onward. Good and clean cultivation is, indeed, all-important; but it will avail little without a fertile soil; and this fertility must be created, or kept up, by a copious application of manures. For these contribute directly, or assist indirectly, to the supply of nearly all the nourishment which plants receive; it is these, which, produced chiefly from the decay of dead vegetable and animal matter, combine most powerfully to give new life and vigor; and thus the apparently putrid mass, is the very material which is converted into the most beautiful forms of nature; and plants and brilliant flowers spring up from the decay of old forms, and thus a continued succession of destruction and renovation is carried on through an unlimited series of ages.

Manures possess different degrees of power, partly from their inherent richness, and partly from the rapidity with which they throw off their fertilizing ingredients, in assisting the growth of plants. These are given off by solution in water, and in the form of gas; the one as liquid manure, which, running down, is absorbed by the fine roots; and the other as air, escaping mostly into the atmosphere, and lost.

The great art, then, of saving and manufacturing manure, consists in

retaining and applying to the best advantage, these soluble and gaseous portions. Probably more than one-half of all the materials which exist in the country, are lost, totally lost, by not attending to the drainage of stables and farm-yards. This could be retained by a copious application of straw; by littering with saw-dust, where saw-mills are near; and more especially by the frequent coating of yards and stables with dried peat and swamp muck, of which many parts of our country furnish inexhaustible supplies. I say *dried* peat or muck, because if it is already saturated with water, of which it will often take in five-sixths of its own weight, it cannot absorb the liquid portions of the manure. But if it will absorb five-sixths in water, it will, when dried, absorb five-sixths in liquid manure, and both together form a very enriching material. The practice of many farmers, shows how little they are aware of the hundreds they are every year losing by suffering this most valuable of their farm products to escape. Indeed, there are not a few who carefully, and very ingeniously as they suppose, place their barns and cattle-yards in such a manner on the sides of hills, that all the drainage from them may pass off out of the way into the neighboring streams; and a farmer is mentioned, who, with pre-eminent shrewdness, built his hog-pen directly across a stream, that he might at once get the cleanings washed away, and prevent their accumulation. He of course succeeded in his wish; but he might, with almost equal propriety, have built his granary across the stream, so as to shovel the wheat into the water when it increased on his hands.

All neat farming, all profitable farming, and all satisfactory farming, must be attended with a careful saving of manures. The people of Flanders have long been distinguished for the neatness and excellence of their farms, which they have studied to make like gardens. The care with which they collect all refuse materials which may be converted into manure and increase their composts, is one of the chief reasons of the cleanliness of their towns and residences. And were this subject fully appreciated and attended with a corresponding practice generally, it would doubtless soon increase by millions the agricultural products of the country.

But there is another subject of scarcely less magnitude. This is a systematic

ROTATION OF CROPS.—If manuring is the steam engine which propels the vessel, rotation is the rudder which *guides* it in its progress. Unlike manuring, rotation does not increase the labor of culture; it only directs the labor in the most effective manner, by the exercise of judgment and thought.

The limits of this article do not admit of many remarks on the principles of rotation. The following courses, however, have been found among some of the best, to be modified according to the various crops adapted to each region of country:



- 1.—1st year. Corn and roots well manured ;  
2d year. Wheat, sown with clover seed, 15 lbs. per acre ;  
3d year. Clover, one or more years, according to fertility and amount of manure at hand.
- 2.—1st year. Corn and roots, with all the manure ;  
2d year. Barley and peas ;  
3d year. Wheat, sown with clover ;  
4th year. Clover, one or more years.
- 3.—1st year. Corn and roots, with all the manure ;  
2d year. Barley ;  
3d year. Wheat, sown with clover ;  
4th year. Pasture ;  
5th year. Meadow ;  
6th year. Fallow ;  
7th year. Wheat ;  
8th year. Oats, sown with clover ;  
9th year. Pasture or meadow.

The number of fields must correspond with the number of the changes in each course; the first needing three fields to carry it out, the second four, the third nine. As each field contains a crop each, in the several successive stages of the course, the whole number of fields collectively comprise the entire series of crops every year. Thus in the last above given, there are two fields of wheat growing at once, three of meadow and pasture, one of corn and roots, one of barley, one of oats, and one in summer fallow.

OPERATIONS IN THE ORDER OF TIME.—The vital consequence of doing every thing at the right season, is known to every good farmer. To prevent confusion and embarrassment, and keep all things clearly and plainly before the farmer at the right time, he should have a small book to carry in his pocket, having every item of work for each week, or each half month, laid down before his eyes. This can be done to the best advantage to suit every particular locality and difference of climate, by marking each successive week in the season at the top of its respective page. Then, as each operation severally occurs, let him place it under its proper heading; or, if out of season, let him place it back at the right time. Any proposed improvements can be noted down on the right page. Interesting experiments are often suggested in the course of reading and or observation, but forgotten when the time comes to try them. By recording them in such a book under the right week, they are brought at once before the mind. Such an arrangement as this will prevent a great deal of the confusion and vexation too often attendant on multifarious cares, and assist very essentially in conducting all the farm work with clock-work regularity and satisfaction.

In reviewing the various items which are most immediately essential to

good farm management, some of the most obvious will be—capital enough to buy the farm and to stock it well; to select a size compatible with these requisites; to lay it out in the best manner; to provide it well with fences, gates, and buildings; to select the best animals and the best implements to be had reasonably; to bring the soil into good condition, by draining, manuring, and good culture; to have every part under a good rotation of crops; and every operation arranged, so as all to be conducted systematically, without clashing and confusion. An attention to all these points would place agriculture on a very different footing from its present condition in many places and with most farmers. The business then, instead of being repulsive, as it so frequently is, to our young men, would be attended with real enjoyment and pleasure.

But in all improvements, in all enterprises, the great truth must not be forgotten, that success is not to be expected without diligence and industry. We must sow in spring, and cultivate well in summer, if we would reap an abundant harvest in autumn. When we see young farmers commence in life without a strict attention to business, which they neglect for mere pleasure, well may we in imagination see future crops lost by careless tillage—broken fences, unhinged gates, and fields filled with weeds—tools destroyed by heedlessness, property wasted by recklessness, and disorder and confusion triumphant; and unpaid debts, duns, and executions, already hanging over the premises. But, on the other hand, to see cheerful-faced, ready-handed industry, directed by reason and intelligence, and order, energy and economy guiding the operations of the farm—with smooth, clean fields, and neat, trim fences—rich, verdant pastures, and fine cattle enjoying them, and broad waving meadows and golden harvests, and waste and extravagance driven into exile, we need not fear the success of such a farmer—debts cannot stare him in the face, nor duns enter his threshold.

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## COUNTRY DWELLINGS.

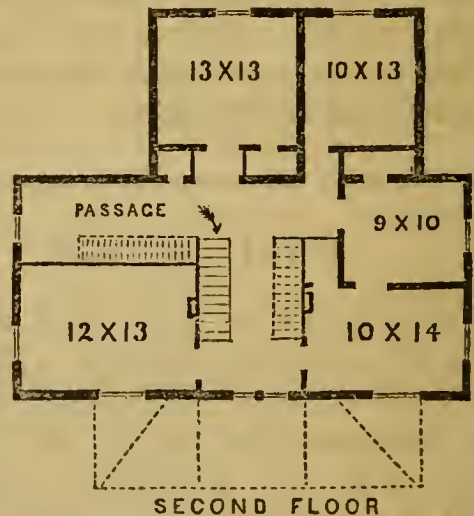
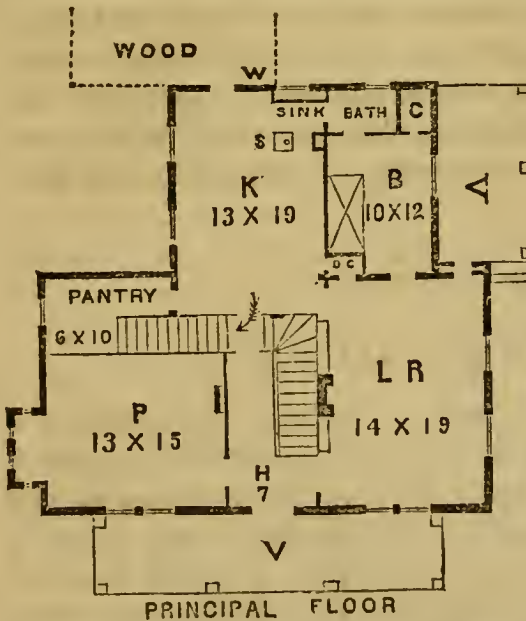
IN addition to the many designs furnished in former numbers of the Register, we give the following, which we hope will contribute towards a supply of the almost interminable demand for plans of farm-houses and rural residences, now felt in every part of the country. The first is a design for a brick farm-house, a sketch of the plan of which was furnished by a correspondent. The perspective view (fig. 18) is added. The advantages of this plan are: the three rooms most used, are in direct contact with and easily accessible to each other; the family bed-room, (B) although near the kitchen, (K) is sufficiently secluded, not opening to the latter; the bath-room, as should always be the case, opens to the bed-room and to the kitchen, at a convenient point for both hot and cold





Fig. 18—BRICK FARM-HOUSE.

water; the kitchen stove (marked s,) stands remotely from the pantry and living-room doors, rendering these cooler in summer; the dish-closet (D. C.) is accessible to both kitchen and living (or dining) room—to the latter it may be by a mere opening and slide. The cellar is entered from the kitchen beneath the front or hall stairs, and is thus quite accessible



to both the kitchen and dining-room. The back stairs start at the back end of the hall, and land over the pantry. The garret stairs start from the passage at the head of the back stairs, and the garret is thus reached without passing through the front rooms and hall. "A flue," observes our correspondent, "should ascend into, or up the side of the living-room

chimney, to ventilate the cellar. The bath-room floor may descend toward the corner next the sink, where the water can pass out, and flow off with that from the sink and well." The cistern for rain-water is in the cellar, directly under the sink, where it may form a square apartment built of masonry, extending up nearly to the joists and covered with plank. A pump passes up through the floor, and flows into the sink, and a tube with stop-cock may pass through the side wall into the cellar. The well (w) is just without the kitchen door. The back door of the living-room opens by means of a double door, with a space of air enclosed on the back veranda (V.)

It may probably be built in a plain and substantial manner, for a sum not exceeding \$2,200—the cost would vary \$500 with the degree of finish and varying price of materials in different localities. If made of wood, it may be afforded for \$400 less, at the average relative price of brick and lumber.

#### SMALL OCTAGON HOUSE.

The plan of this house was furnished by a correspondent—we have added an elevation. The octagon form gives the greatest amount of interior space for a given surface

of outside wall, and the object of this plan has been to arrange a house for a small family, where the mistress does her own work, or immediately superintends it. Our correspondent remarks:—"The house is erected on what is called a balloon frame. The lower rooms are 8 feet 8 inches high, the upper rooms 8 feet. Roof to project two feet. Cellar wall 18 inches above ground. Weather boards either common clapboards or vertical inch boards battened. The plan

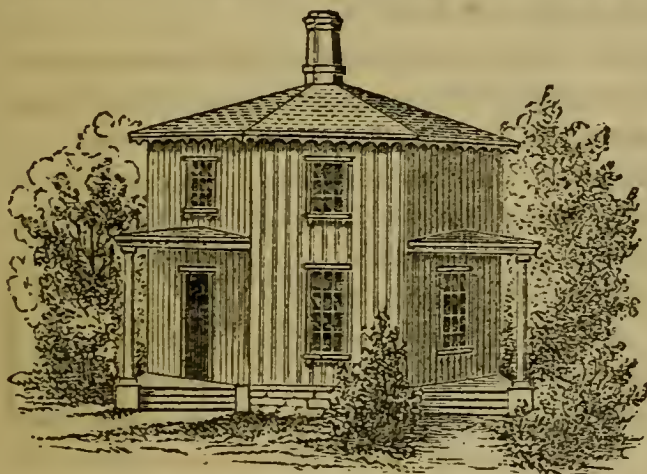


Fig. 21—SMALL OCTAGON HOUSE.

project two feet. Cellar wall 18 inches above ground. Weather boards either common clapboards or vertical inch boards battened. The plan

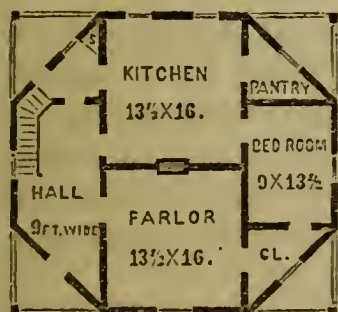


Fig. 22—PRINCIPAL FLOOR. Sides  $13\frac{1}{4}$  feet long inside. Built with four-inch scantling, it is about  $33\frac{1}{4}$  feet from outside to outside."

explains itself, and is thought to be very convenient. Cellar stairs under hall stairs. Chimney in the center. Hall lighted as other rooms from the side, rendering the cupola unnecessary.

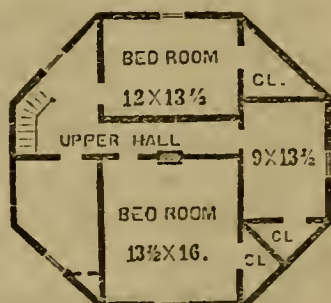
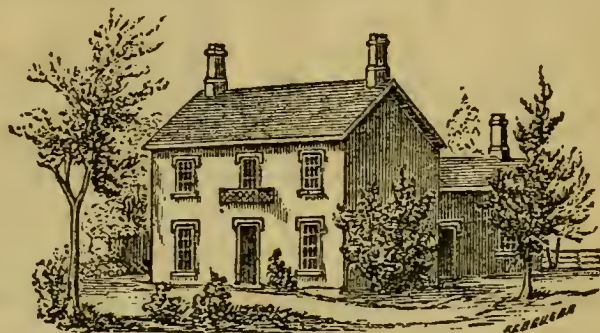


Fig. 23—CHAMBER PLAN



Our correspondent thinks this house might be built in the cheap way described, for seven or eight hundred dollars—with larger rooms and more substantial materials and better finish, it would cost twelve to fifteen hundred.

Many attempts have been made in designing larger octagon houses, the principal object being to economize in the amount of exterior wall—but all that we have seen are encumbered with serious defects, either in the plan or in the exterior appearance, this form rendering it especially difficult to combine neatness and convenience.



PLAN OF A SMALL HOUSE.

This plan is for a small and cheap house, and combines convenient arrangement with a compact disposition of the apartments. On account



Fig. 25—FIRST STORY.

of its simplicity, but little explanation is necessary. The entry is small, and occupies but little space, yet furnishes ready access to all rooms in the house but the kitchen. The upper entry may be

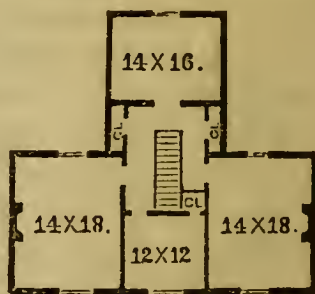


Fig. 26—SECOND STORY.

lighted by a dormer window, or by the omission of one of the closets at its side. Closets may be made under the stairs, for the two rooms, right and left.

#### PLAN OF A SMALL COUNTRY HOUSE.

On page 28 of the Rural Register for 1855, a plan and perspective view are given of a small house, possessing much convenience for a building of that size. A correspondent has since furnished the accompanying improvement, (fig. 27) differing by giving the two principal rooms a square instead of an octagonal form, by placing the closets between them and not at the corners, and also flanking the kitchen with two small bedrooms.

Another correspondent has still later given us another modification, shown by fig. 28, and of which he furnishes the following description:

“Having noticed a plan for a small house, (fig. 27) I will give you the plan of a house I built last summer. It is much the same as the plan

referred to, with the addition of two small rooms, viz: a bathing-room and pantry, which, I am satisfied, can be added to the first plan without increasing the cost over \$15, as it takes no more outside wall to enclose the building with these two rooms than without them, and two angles less.

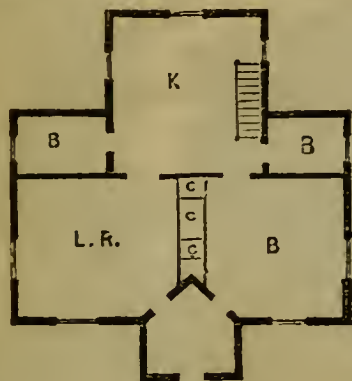


Fig. 27.



Fig. 28.

"In maturing a plan, I kept steadily several objects in view. First, how many rooms and what size a small family would need; and secondly, what form I should build on to get the greatest amount of room for a certain expense, and in the most compact form. I was satisfied the nearer square I could build, so as to give the rooms proper shape, the better, as it would enclose the greatest amount of room with a certain amount of outside wall, with the least number of angles, and in the most compact form possible. My house is 27 by 33 feet, one story 10 feet high, with steep roof, so that I have two good bed-chambers on the second floor 14 by 16½ each. On the lower floor there are 7 rooms, 2 small halls, 1 closet, and 1 wardrobe under the stairs, opening into family bed-room, and 2 fire-places. Had I plenty of money to spare, I would have had all the rooms larger and the story 12 feet high, but for a small family they do very well."

Fig. 28 is copied from the sketch sent, which we think a very successful attempt in arranging the apartments of a moderate sized house; the roof having no receding angles, is consequently not subject to leakages. The only material defect we observe, is, that the kitchen is lighted and aired on but one side—windows on opposite sides, like those in fig. 27, being more favorable to a pure air, and that cleanliness which is best secured by ample light. Its position, however, would make it warmer in winter; but also warmer in dog-days.

Most of the plans hitherto given in the Register, are for *cheap* houses. The following several views and plans of dwellings of a more costly character, are taken from CALVERT VAUX's work on "Villas and Cottages," a very complete and perfect treatise on the better class of Country Houses, and possessing the rare merit of combining compact and convenient plans with neat and picturesque exteriors. The plans we have



selected are only fair specimens of the many which are given in this excellent work.



Fig. 29—IRREGULAR COUNTRY HOUSE.

The first view is of a moderate-sized country house, and the whole of the following description is copied from Vaux :

“ This design was prepared and executed for a gentleman of Newburgh ; and the general idea of the plan includes so much that is called for by the American climate and habits of life in the Northern States, that it will probably be better worth the attention of those who wish to build a moderate-sized cheap house, with a kitchen above ground, than many other plans of more pretension. It possesses one convenient quality, which some other styles of plans cannot be arranged to include, for it admits of many modifications, without sacrificing its advantages. It may be completely altered in outside appearance, and doubled in extent of interior accommodation, and yet be in reality the same plan. It can be adapted to almost any situation by a proper arrangement of the roofs. Thus, for example, on an elevated and somewhat open site, such a one as this house occupies, a roof of only moderate pitch is desirable. On level ground, or in a valley, a high-pitched roof should be preferred. It is also an economical plan for the accommodation afforded, as will be seen by the particulars of cost that are annexed. The house, as now finished, is constructed with an eight-inch brick wall, furred off outside, and covered with clap-boards in the ordinary way followed in a wooden building. This plan of construction was adopted in accordance with the special request of the proprietor, who preferred it to any other method. Its advantages are, that it secures to a certainty a perfectly dry interior wall. On the other hand, it seems undesirable to have a brick house, and to give it the appearance of a wooden one, as brick is the superior and more

durable-looking material. The accommodation may be thus described: A veranda-porch on the east provides a covered approach to the front door. The principal hall, 11 6 by 10 feet, gives access to the parlor and library, both of which are on the south of the house, and also to the



PLAN OF PRINCIPAL FLOOR.

dining-room. Another door opens on to a staircase-hall, which is easily accessible either from the principal rooms or from the kitchen wing. This is desirable, as the scale of the house would not warrant a second staircase. An east and a south veranda are supplied to the principal rooms, but each has windows that are unobstructed by any veranda. The dining-room connects through a pantry with the kitchen wing, which is also approached from the main body of the house under the staircase. A lobby opens on to a kitchen veranda, facing south, that provides a servant's entrance, and is convenient for hanging out clothes under cover in rainy weather. A kitchen, 17 by 13, fitted up with closets, wash-trays, and store-room, completes the accommodation on the main floor and wing. By this plan the disadvantages of living in the basement are entirely avoided, and the lady of the house can superintend her servants with ease and comfort.

"In the chamber plan will be found five bed-rooms, and a bath-room and water-closet; and in the wing two bed-rooms, a linen-press, and a house-

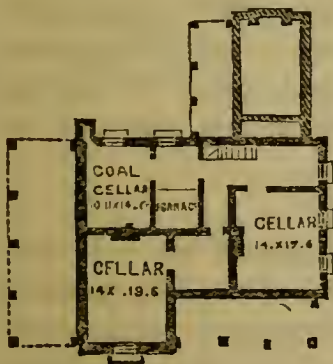


Fig. 31—BASEMENT.

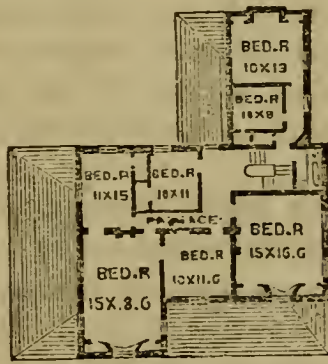


Fig. 32—CHAMBER PLAN.

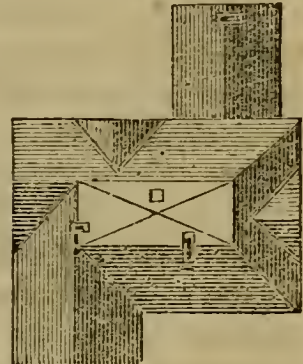


Fig. 33—PLAN OF ROOF.

maid's sink. All these rooms are supplied with registers near the ceiling, that communicate with foul air flues separate from the chimney-flues. In the garret over the bath-room is a large well-lighted linen-room; and as this is planned on the half-landing, it is very easy of access from the



chamber floor. A large store-room, the size of the bed-room over the dining-room, is finished off under the roof in a common way, and is secured with a door after being enclosed from the stairs by a plastered partition. The remainder of the space is open and unplastered. It makes a very roomy garret, with plenty of headway all over it; but the windows in the peaks are, of course, close to the floor, and it was never intended that any bed-rooms should be fitted up here. The roof is covered with shingles, the flat being floored and covered with canvas. In the basement are cellars and furnace-room, the kitchen-wing foundations not being carried down farther than was necessary to keep clear of frost. In this house special precaution was taken, by the proprietor's request, with regard to the plumber's work. All the pipes, hot, cold, and waste, were enclosed in a tin envelope fitted tolerably closely to the pipes. As the work proceeded, this tin case was soldered up every here and there, and particularly where the pipe is led through the wall, in the first instance, and where it starts from the boiler. By this means the little insects that work their way from below, and are often found about water fixtures in rooms, are prevented from crawling up and down, and breeding among the warm pipes, as they are tempted to do in many situations.

"The carpenter's contract for this house was taken at \$3500; the mason's at \$2500; the remainder of the work was done by the day.

"After the contracts had been made, the proprietor left the work entirely in the hands of the architect; and, with the exception that hard walls were substituted for brown walls throughout, and that some trifling alterations were made in the arrangements for the linen-press, the plans, as signed, were faithfully executed for the contract amount, without any difficulty whatever. The carpenter's and mason's extras, which amounted to \$350, included the change from brown wall to hard finish, and all the work appertaining to a large outbuilding at some distance from the house."

It will be perceived that this house, which cost about \$6000, might have been built much cheaper of brick in the ordinary way; and at a still less sum, or at one-half its actual cost, if built of wood only. We do not recommend it for its mode of erection, but for its admirable plan and fine exterior views.

#### SQUARE BRICK COUNTRY HOUSE.

This house, (fig. 34) with the exception of a small central projection, is nearly a square, and it consequently possesses the advantage of much enclosed space for the amount of wall. Its otherwise monotonous appearance is relieved by the projection in front, and by the irregularity of its roof. Those who desire a more irregular outline, may apply the plans here given (figs. 35 and 36) to the accompanying neat and picturesque exterior—(fig. 37.)

The plan, which combines many excellences, is thus described by Vaux:

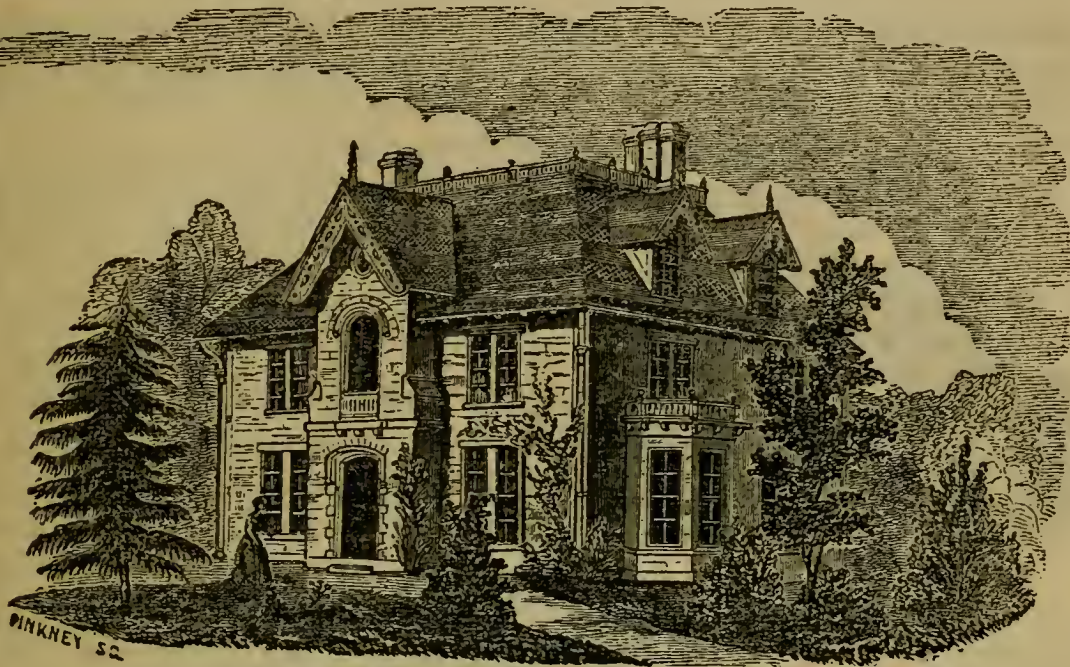
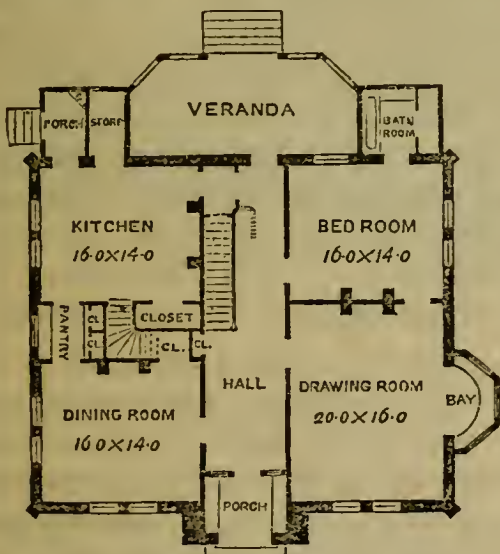


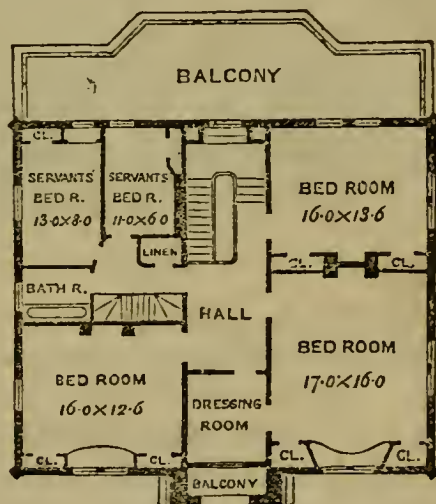
Fig. 34—SQUARE BRICK COUNTRY HOUSE.

“The house is entered by a recessed porch, with a covered balcony overhead. This upper balcony being also recessed in the brick-work, and enclosed at the sides, is always in shadow, and materially helps to relieve what would otherwise be a monotonous front. This space is fitted



PLAN OF PRINCIPAL FLOOR.

Fig. 35.



PLAN OF CHAMBERS.

Fig. 36.

with a glazed frame in the winter, the porch being enclosed with folding-doors as soon as the cold weather sets in. The hall extends through the house, and communicates with a parlor and bed-room, a dining-room, and a veranda in the rear. The main stairs are in this open hall, and on the half-landing is a connection, through a French casement window, with a balcony over the veranda, from which a pretty view is gained. The



parlor has a large bay-window in it, the cornice of the room being carried round the recess that it forms. There is a private door from this room to the bed-room adjoining.

"It is not generally a desirable plan to give up the space necessary for a bed-room on the principal floor; but circumstances occur in which it is

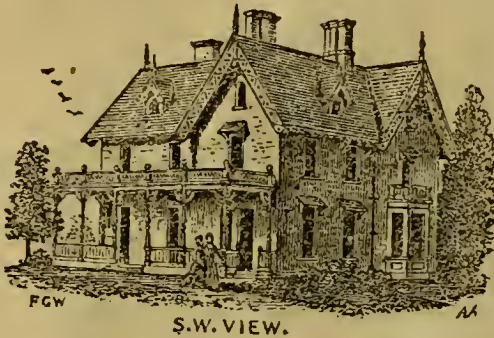


Fig. 37.

a very great desideratum, and this study may serve to show how, in a simple house, the idea may be developed. It will be perceived that a portion of the veranda is enclosed for a small dressing-room to this bed-room, thus making it a far more commodious sleeping apartment than it would otherwise be. The dining-room connects with a pantry, and is also supplied

with a large china-closet. The pantry is fitted up with hanging-shelf, drawers, and closet, and connects with the kitchen, which is thus shut off from the living-rooms, although under the same roof as the rest of the house. An enclosure of the veranda, similar in size to that on the opposite side, supplies a space for a pantry and sink-room. The servants' entrance is quite convenient of access from the road, but, at the same time, is shut off by its position from interfering with the privacy of the veranda. A door, where shown near the hall door to veranda, encloses the basement stairs for the use of the kitchen, and a compact flight of stairs from the kitchen itself, provides a separate access for the servants to the bed-rooms above. This staircase occupies a very small space, and is a great addition to the convenience of the house. In the basement is a wash-room under kitchen, with an outer entrance, close by servants' entrance, for convenience in carrying out clothes to dry. The remainder of the space is not finished off, and furnishes cellars and furnace-room.

"A straight veranda enclosed on both sides would not, perhaps, be thought sufficiently airy, and a projection is therefore made, as will be seen on reference to the plan, to increase its size and give it a more open effect. This arrangement also adds somewhat to the external appearance of the design, at but little additional expense, while it is calculated to insure privacy in a suburban house; and in common houses the notion is carried out frequently, in a simple way, by lathing up the ends of verandas, to prevent them from being overlooked by next-door neighbors. Such a veranda as is here shown, will be almost as retired as any of the rooms inside the house.

"Up stairs are three full-sized bed-rooms, and a small bed-room, or dressing-room, a bath-room, and water-closet, a linen-press, and two servants' bed-rooms, the latter disconnected with the other apartments. This arrangement is made with the idea that the attics are to be left entirely

unfinished for a time, the house being occupied by a small family ; but the plan has been, from the first, so arranged that three or four airy, well-lighted rooms can be fitted up at any future time, and if this should ever be done, the two servants' rooms shown on chamber plan, might be converted to the use of the family, and the servants' rooms arranged above."

The actual cost of this house, which was erected for a gentleman at Newburgh, with the addition of an ornamental fence, and a moderate-sized stable and coach-house, was over \$7000—but the same plan may be used for a simpler and cheaper structure, or for a good farm-house of wood, that might be erected for about half that sum.



Fig. 38—BRICK VILLA WITH TOWER.

For beautiful picturesque effect, this exterior view is one of the finest in Vaux' "Villas and Cottages." It is especially adapted to a somewhat varied surface of country, or where moderate hills predominate, and it should stand at some distance from the road and other dwellings. It had not been erected when Vaux wrote his work, and the cost was therefore only estimated, at over \$7000. The following is his description :

"A recessed porch, large enough to serve as a morning veranda, provides access to the principal hall, which is only of small dimensions, but it is provided with cloak-closets, and contains the doors to the three principal apartments, and to the staircase. The library is in the lower story of the tower, and the design is so arranged that this tower can be omitted entirely when the first contract is made, without a disagreeable appearance being the result ; and although the interior accommodation



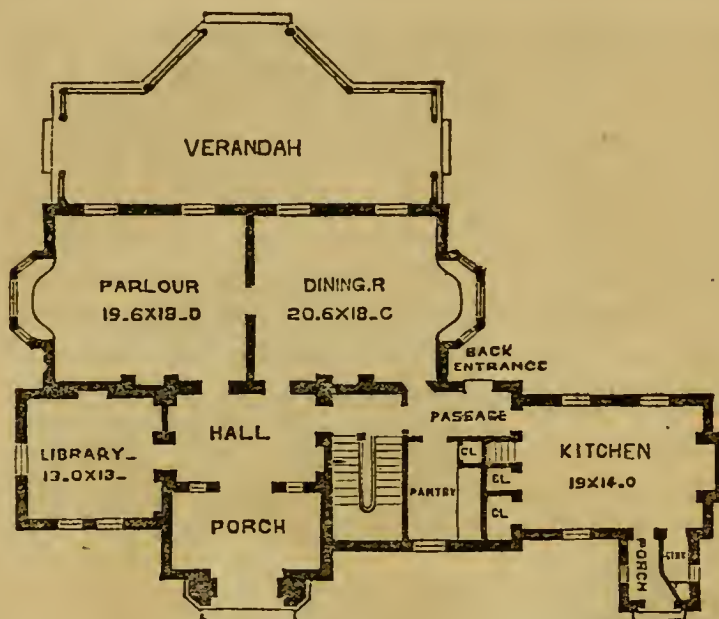
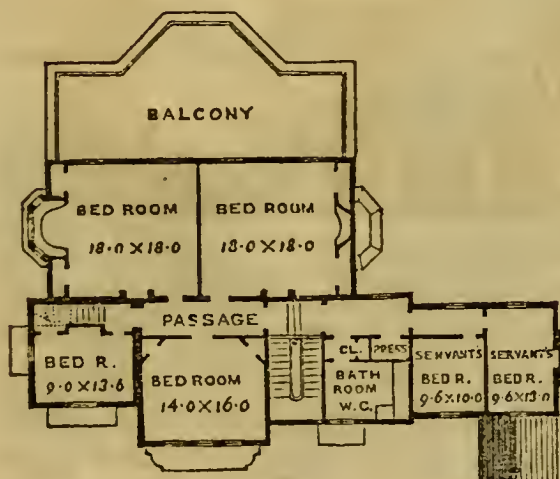
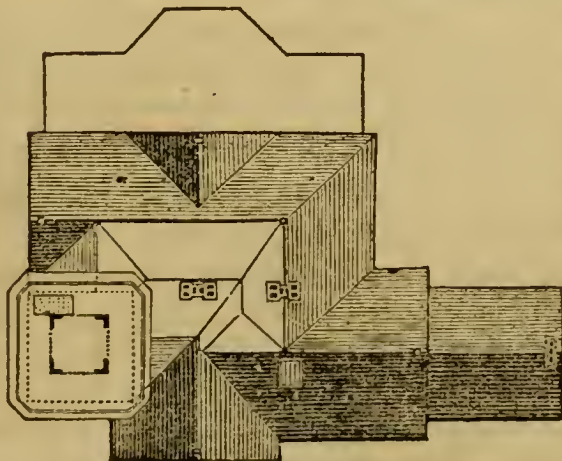


Fig. 39.



PLAN OF CHAMBERS.



PLAN OF ROOFS.

and the exterior effect of the house would be materially reduced under those circumstances, the design would still be fair and complete, and the addition could be made at any time. A parlor and dining-room open on to a veranda. Near the dining-room is a pantry, a garden entrance, and door to the kitchen, which is in a wing building.

"The chamber plan supplies four bed-rooms, and a fifth in the upper story of the tower, also a bath-room and water-closet, a linen-press and two servant's bed-rooms. The observatory is conveniently reached by continuing the staircase that leads to tower bed-room. The roof is arranged as shown on the plan. The intention in this design is to insure, as far as possible, an irregular picturesque effect, without any sacrifice of convenience or a large outlay of money. As the house is to be built on somewhat of a highland, it seems undesirable to use an acute pitch for the roof, for the trees that surround the site proposed for the house, although vigorous and well-shaped, are somewhat scattered, and of no great magnitude. They would, therefore, scarcely take their proper share in the general composition, if the roof were made too promi-

ment a feature. Considerable judgment is needed in settling on the exact position for a house like this, so as to realize all the advantages that the site affords. It must not seem to overhang the descent, or the effect will be crowded, and will give the idea from the road of a small, restricted property. Neither should it retreat very far from the brow of the hill, or the house will be shut out of sight, and altogether lost on a tolerably near approach to the premises. A happy medium, both in the location of the site and in the pitch of the roof, is the desirable point to aim at under such circumstances."

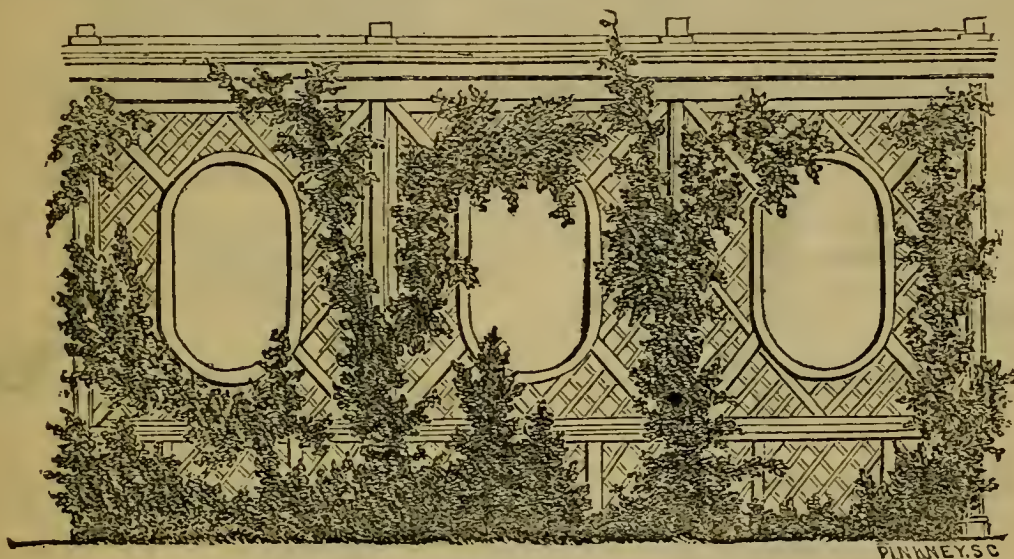


Fig. 42.

The above design of a partially enclosed veranda, was used in screening from view a kitchen and other portions of the out-buildings too much exposed by their side-hill position. The trellis-work here represented, freely admitted light to the kitchen; and secured at the same time a proper degree of privacy, by excluding the view from the garden and ornamental grounds. Similar contrivances may sometimes be used to great advantage for like purposes.

### Furniture and Rural Structures of Iron.

A beneficent provision for the wants of man is shown in the large existence of iron. It is incomparably the most abundant metal found in nature. At the same time it possesses strength greatly superior to that of other metals. It is nearly twice as strong as copper, three times stronger than silver, and has nearly four times the tenacity of gold. It is almost the only metal that can be worked by welding. Its combinations with carbon in the formation of cast-iron and steel, greatly enhance its value; and its magnetic properties are indispensable to navigation.

The introduction and use of iron has kept nearly even pace with the





Fig. 43—GRAPE CHAIR.

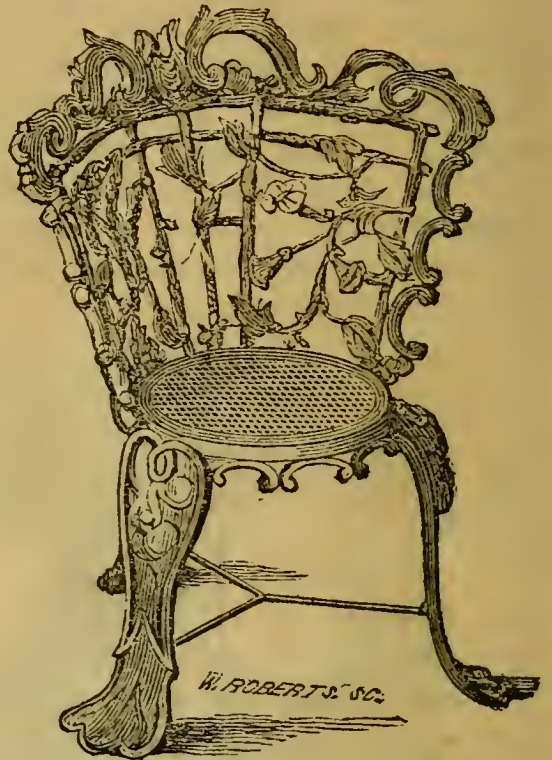


Fig. 44—MORNING GLORY CHAIR.



Fig. 45.

HALL CHAIRS.



Fig. 46.

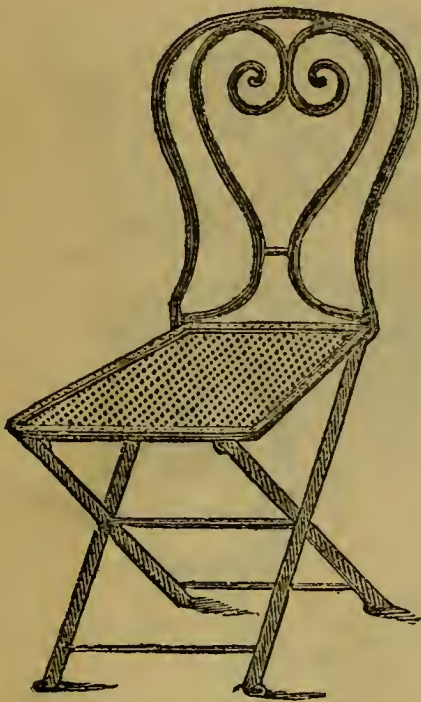


Fig. 47—TRAVELING CHAIR.

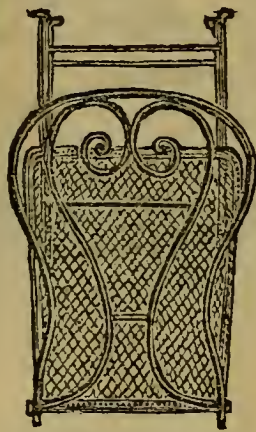
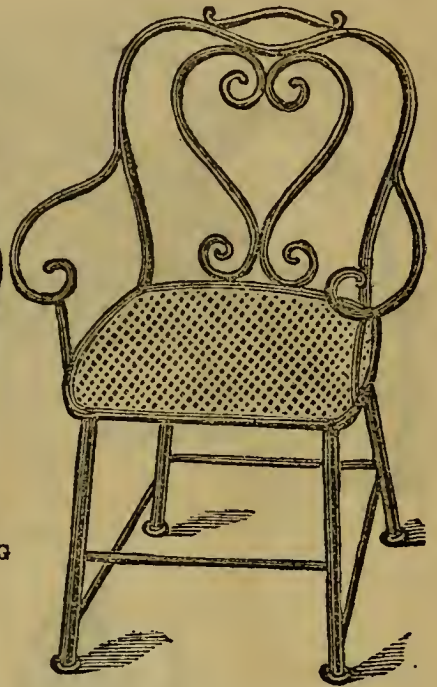
Fig. 48—TRAVELING  
CHAIR FOLDED.

Fig. 49—WIRE ARM CHAIR.

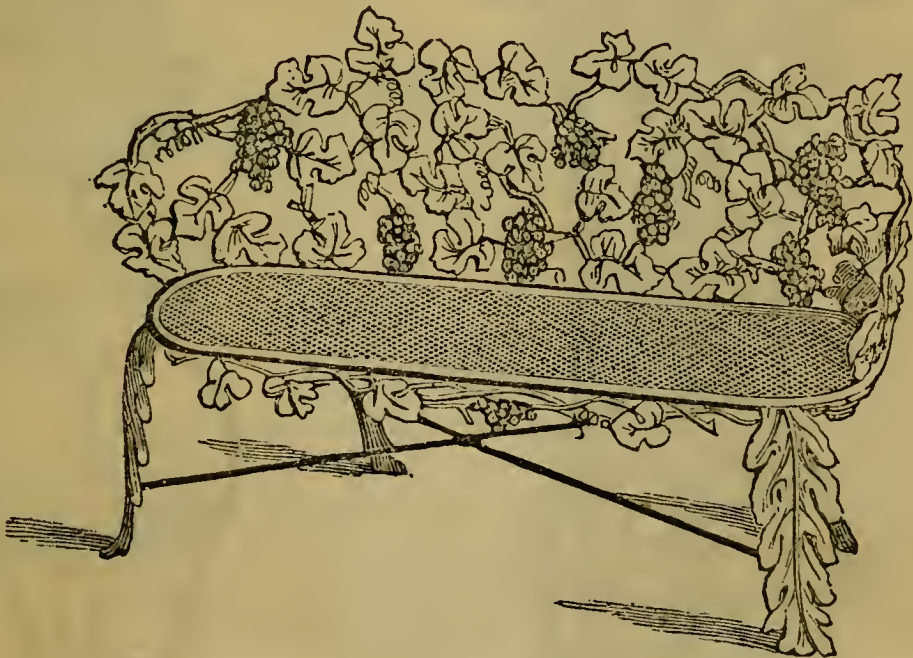


Fig. 50—GRAPE SETTEE.

progress of civilization. With the ancients it was a comparatively scarce metal. In 1740, its production in England had risen to 17,000 tons. England at present produces 3,500,000 tons—an increase of more than one hundred and fifty fold in a century. The whole production of the world is estimated at 7,000,000 tons annually—enough to load a line of common wagons reaching around the circumference of the earth. In 1810,



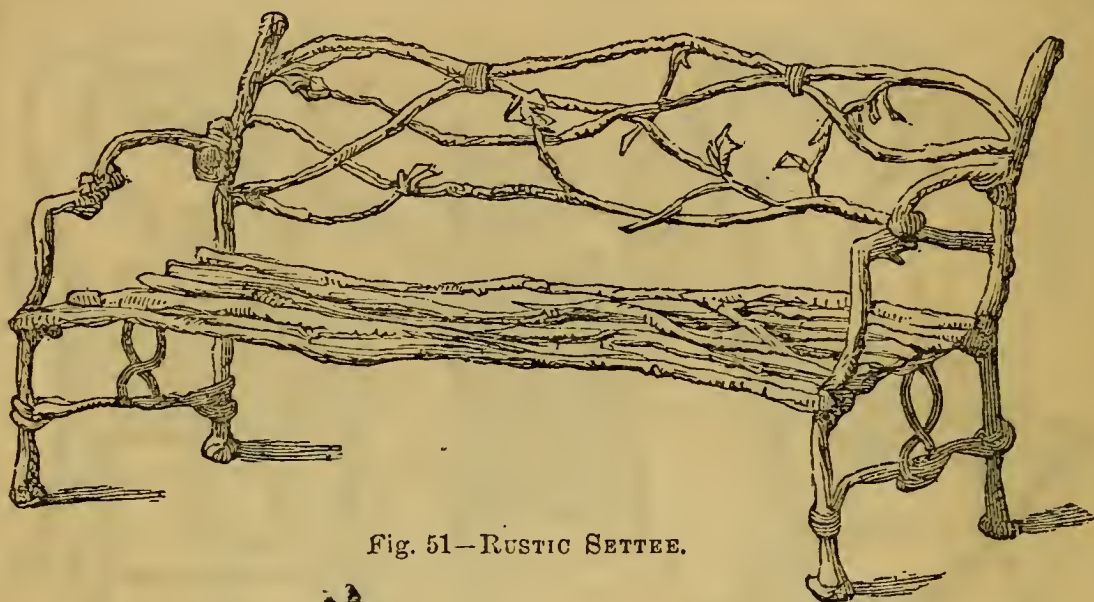


Fig. 51—RUSTIC SETTEE.



Fig. 52—HAT TREE.

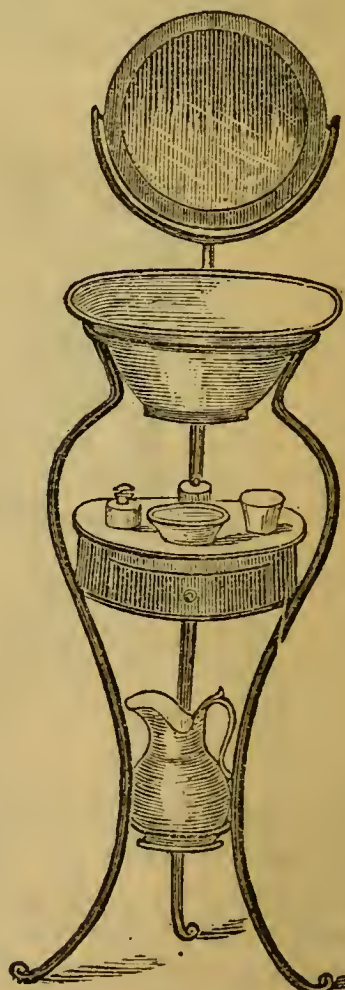


Fig. 53—IRON WASH STAND.

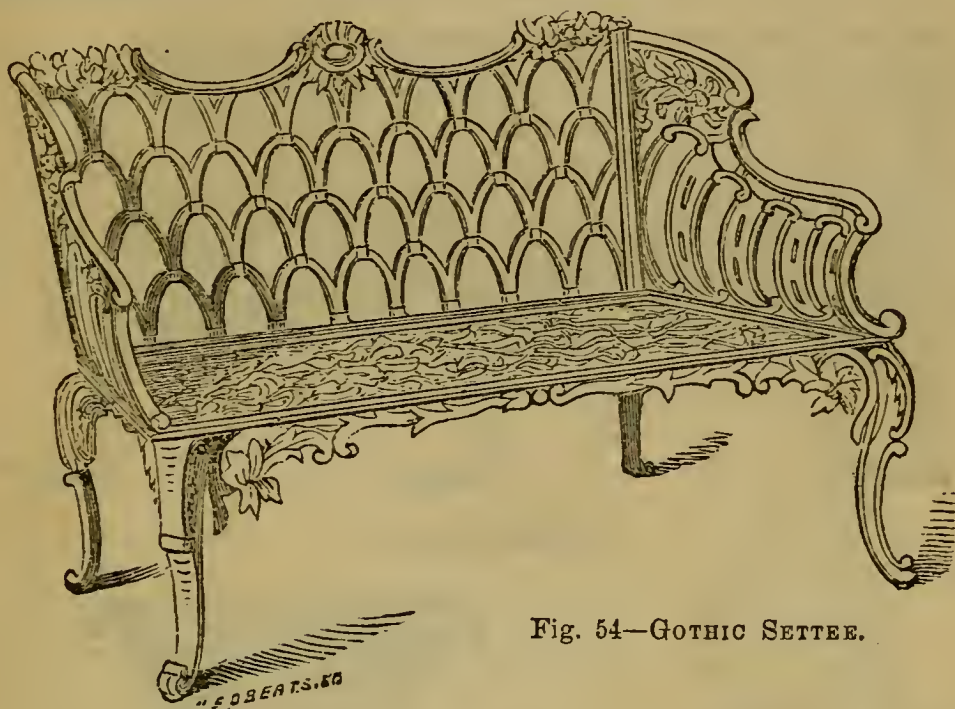


Fig. 54—GOTHIC SETTEE.

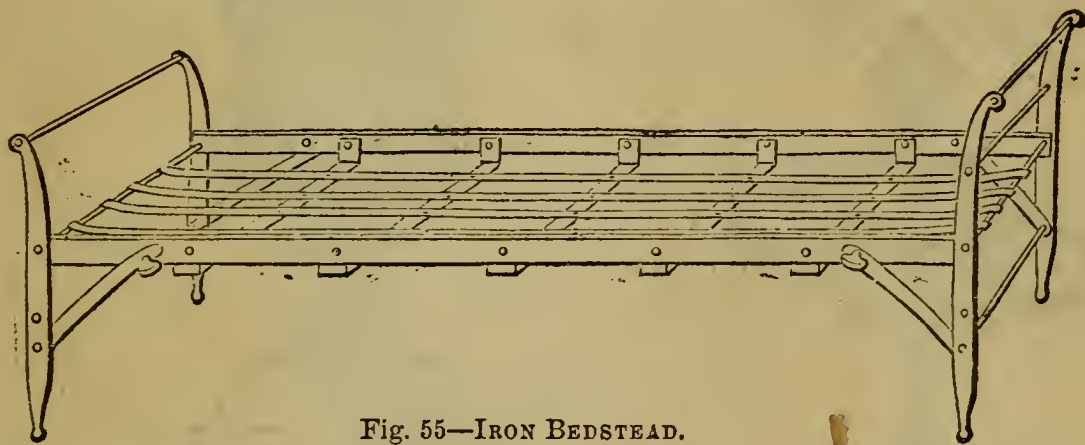


Fig. 55—IRON BEDSTEAD.

the United States produced 54,000 tons—now the annual product is a million tons. The consumption of iron has been said to be a social barometer,—showing the relative height of civilization among nations—which is corroborated by the fact that while Great Britain and the United States manufacture two-thirds of the whole amount in the world, Spain and Norway each manufacture but one-three hundredth part, and Italy but a hundredth.

The different uses to which iron is applied, are almost innumerable, from minute cambric needles and delicate watch-springs, to iron roads stretching over thousands of miles, and ponderous bridges of many thousand tons. A bar of iron worth \$5, may be increased in value by working into horse-shoes to \$10; into pen-knife blades to \$3000; into shirt buttons to \$29,000; and into the balance-springs of watches to \$250,000. We pass over all these multifarious uses, and confine ourselves at present to rural structures and household furniture.



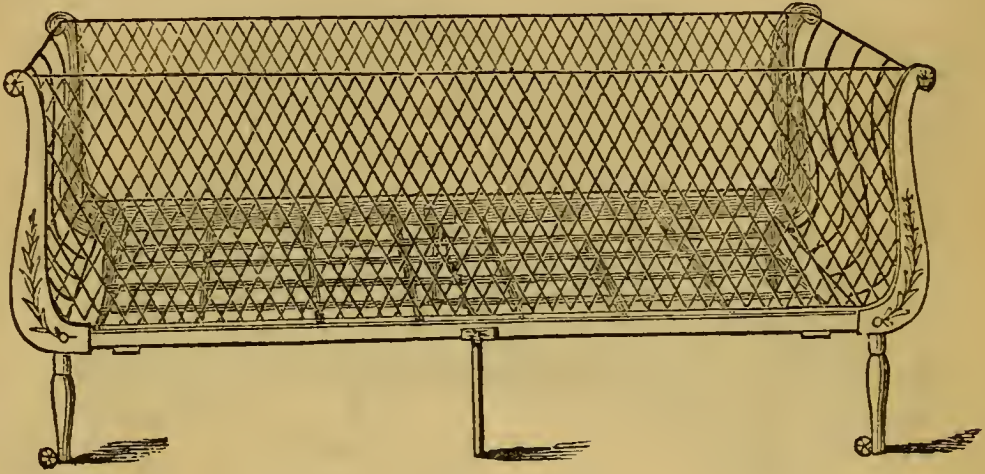


Fig. 56—CRIB.

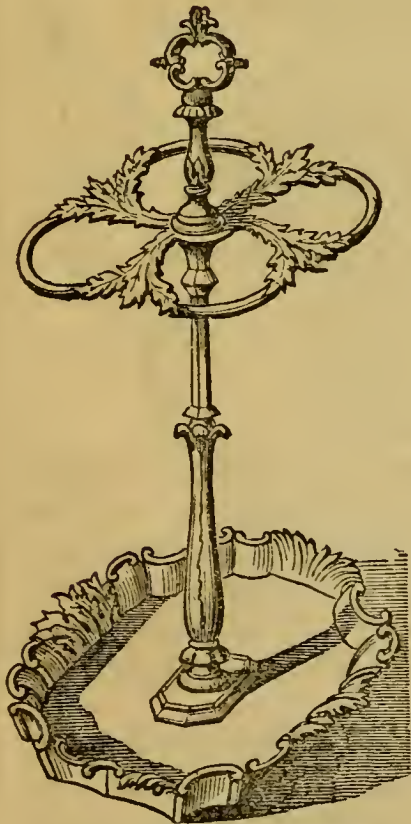


Fig. 57—UMBRELLA STAND.

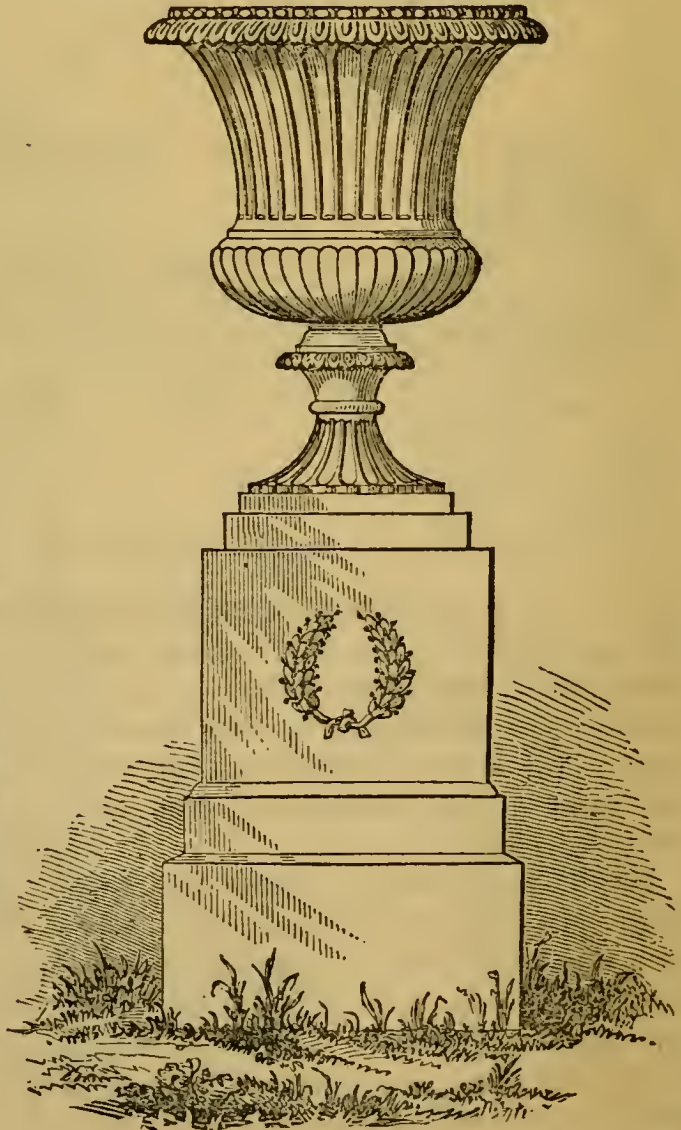


Fig. 58—VASE.

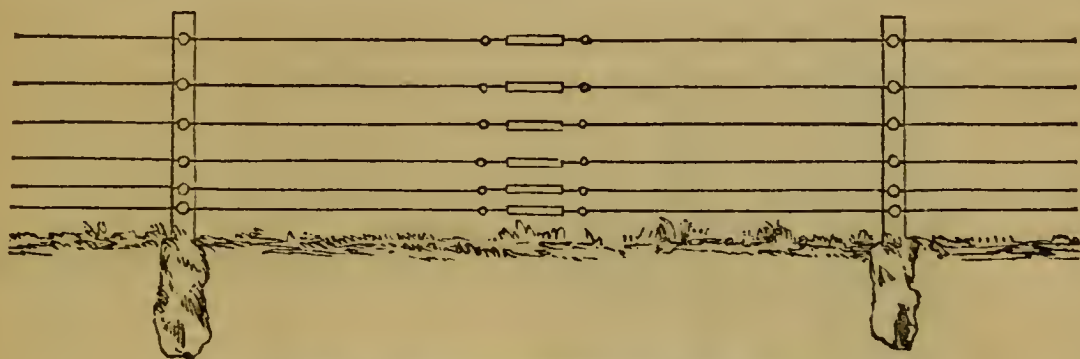


Fig. 59—WIRE FENCE WITH WOOD POSTS.

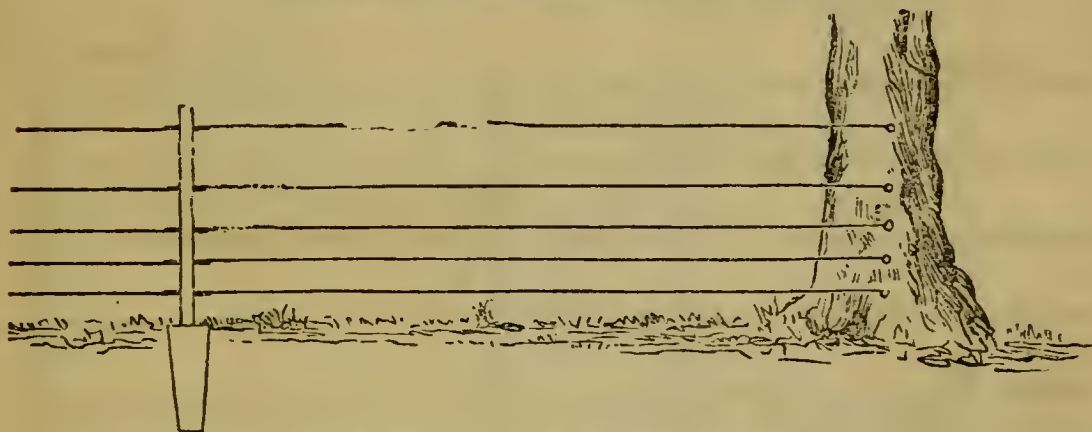


Fig. 60—WIRE FENCE WITH IRON POSTS.

For these two purposes, there are several extensive manufactories in this country, some of the largest of which are in the city of New-York, and among them is that of HUTCHINSON & WICKERSHAM, (312 Broadway,) who furnish all the articles here named, and for the convenience of our readers, we have procured and appended the prices at this establishment, as the knowledge of the cost is an important desideratum to those who wish to procure them.

**HOUSEHOLD FURNITURE.**—Among the various kinds of *iron chairs*, we may enumerate the “Grape Chair,” (fig. 43, \$5)—the “Morning Glory Chair,” (fig. 44, \$6)—and the two Hall Chairs, (figs. 45 and 46, each \$4.50) the preceding being of cast-iron; and the following *wire chairs*, namely, the Folding or Traveling Chair, (figs. 47 and 48, \$4.50)—one representing it as closed for carrying, and the other as open and standing for use. The wire Arm-Chair (fig. 49) is sold at \$8.

Among the *Settees*, the Grape pattern (fig. 50, \$9 to \$15) is an especial favorite; the Rustic Settee (fig. 51, \$10) is of lighter form, and the Gothic Settee (fig. 54, \$17 to \$20) is best adapted to places where Gothic architecture prevails.

A neat Umbrella Stand is shown in fig. 57, (\$1.50 to \$6)—and iron Wash Stand, (fig. 53, including crockery, \$7,) with looking-glass. A new and improved Hat-Tree is exhibited in fig. 52 (\$16.) Many other forms of hat and umbrella stands are manufactured.



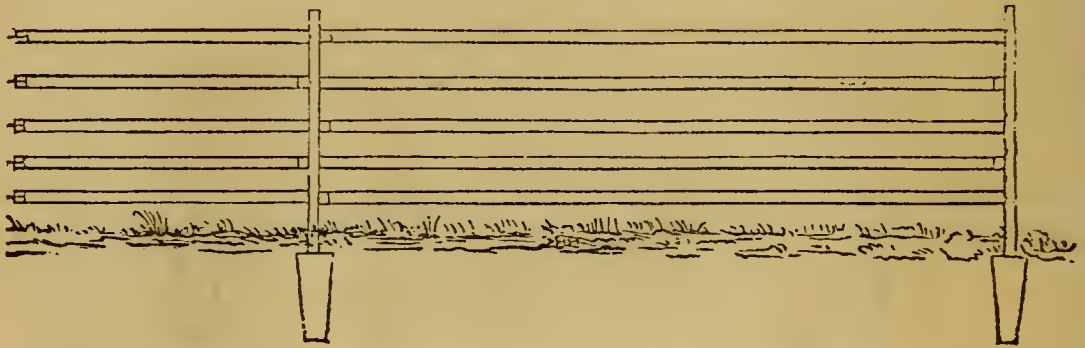


FIG. 61—IRON FENCE WITH FLAT RAILS.

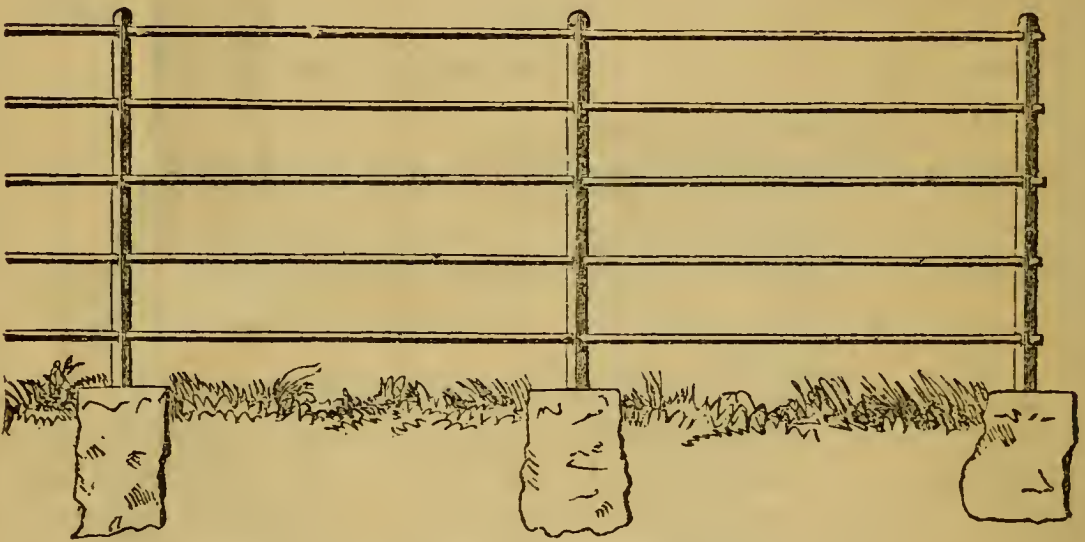


FIG. 62—FLAT RAIL AND CORRUGATED POST FENCE.

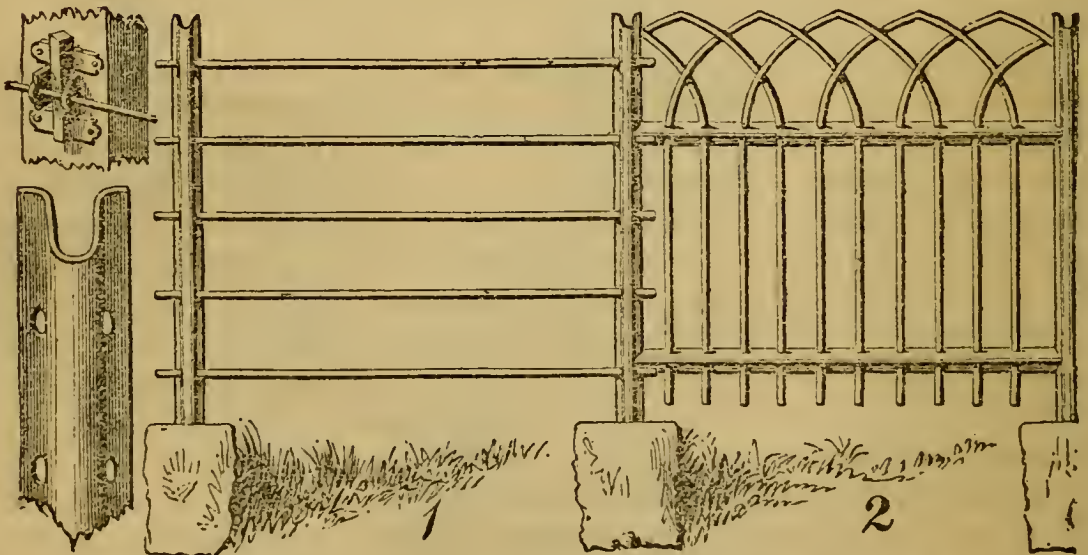


FIG. 63—(1) CORRUGATED RAILROAD AND (2) RURAL WIRE FENCE.

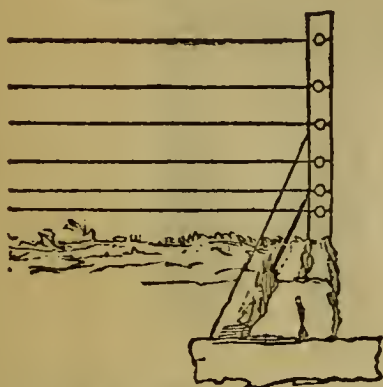


Fig. 64—BRACE FOR END POST.

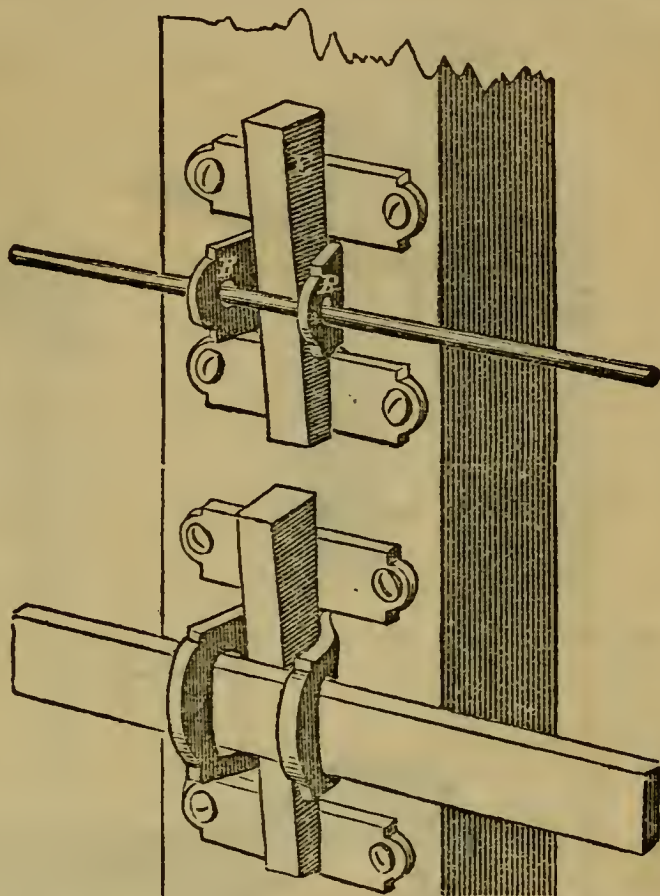


Fig. 65—MODE OF FASTENING WIRES OR BARS TO WOODEN POSTS.

*Iron Bedsteads* possess two most important advantages over those of wood,—first, in their almost endless durability, and secondly in their entire freedom from bugs. They should, however, be substantially made, as the desire for a *cheap* article often induces a weak and flimsy structure, which does not stand firmly, and is liable to become bent by use. Fig. 55, when made of stout bars, is the simplest and one of the very best in use, although not so ornamental as some others, (\$4 to \$6.) Others of more elaborate patterns are made, (\$7 to \$9.) Fig. 56 (\$10) shows a *Crib*, the sides of which are left out.

**RURAL ORNAMENTS AND STRUCTURES.**—Cast-iron vases are very durable ornaments on the more finished parts of grounds, and require only occasionally a small application of paint. Fig. 58 represents a neat vase of this character with its pedestal. The prices of these vases vary with their size, from \$5 to \$20, and the pedestals are about \$5 each.

**Fences.**—Wire fences have generally failed in consequence of endeavoring to make them cheap. We believe that none capable of withstanding cattle, can be made in open ground for much less than \$2 per rod. A lower price reduces the size of the wires, and renders them inefficient. Fig. 59 represents one of the simplest kinds of Wire Fence, with wooden posts. The screws for lengthening and contracting the wires for heat and cold, are shown between the posts; and the brace to sustain the end-post,



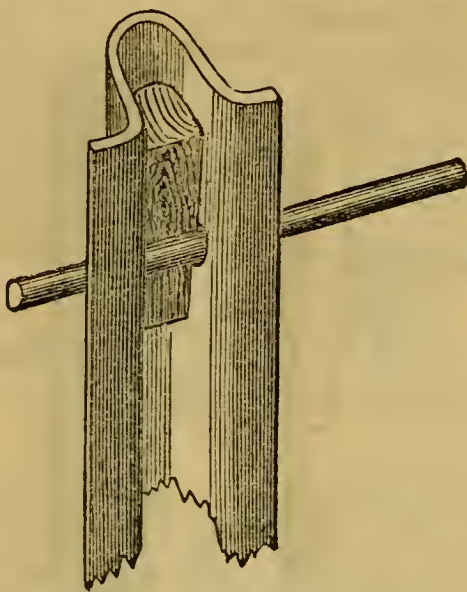


Fig. 66—Post for Wire Fence.

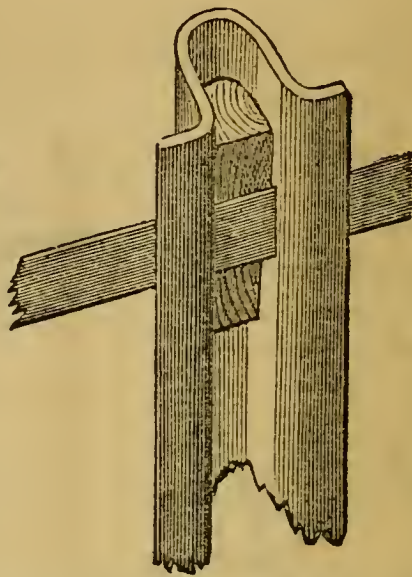


Fig. 67—Post for Iron Rail Fence.

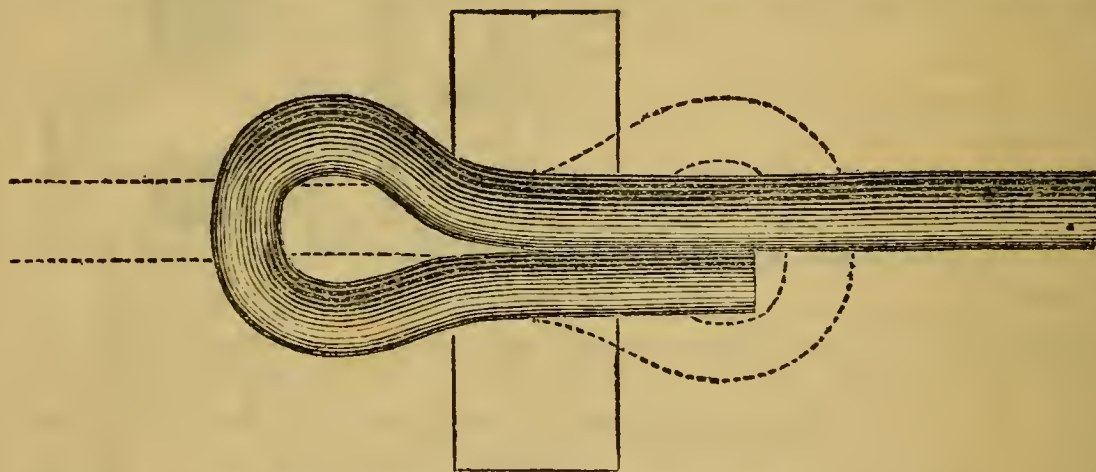


Fig. 68—Wires Fastened to the Post.

placed in a short sill at the bottom, is represented in fig. 64. This fence costs, if five wires high, \$1.33 per rod, besides the posts, and 20 cents per rod for each additional wire. Fig. 60 shows a similar fence with iron posts set in cedar blocks, the cost of which for five wires is \$2 per rod, and for ten wires, so as to exclude pigs, turkeys, geese, &c., \$3 per rod. Fig. 61 represents the rails of flat iron, instead of wires, which cost but little more, and by being more visible, prevent cattle from striking it. The flat bars are not so liable to sag.

An ingenious mode of fastening these wires or bars to wooden posts, is shown in fig. 65; and Wickersham's Patent Corrugated Iron Fence-Post, for each of these kinds of rails, is represented by figs. 66 and 67. Fig. 62 is a more distinct figure of the Flat Rail and Corrugated-Post Fence. Fig. 63 is a still more distinct exhibition of the same, the right-hand portion showing the "Rural Wire Fence," the cost of which is from 40 to 75 cents per running foot. Figs. 69, 70, 71, and 72, represent the exact

size of wire of different sizes, and may be useful to those not familiar with the dimensions, designated by numbers.



No. 0.



No. 3.



No. 6.



No. 11.

Fig. 69—5-16 inch. Fig. 70—1-4 inch. Fig. 71—3-16 inch. Fig. 72—1-8 inch.

The mode of passing the ends of the wires through the post, and securing them to their places, is shown by fig. 68, where the square outline is the cross section of the iron post. It has square openings or slots made for each wire. Loops are made as represented, and the loops for each wire are both passed through one slot, and then turned so as to lie hori-

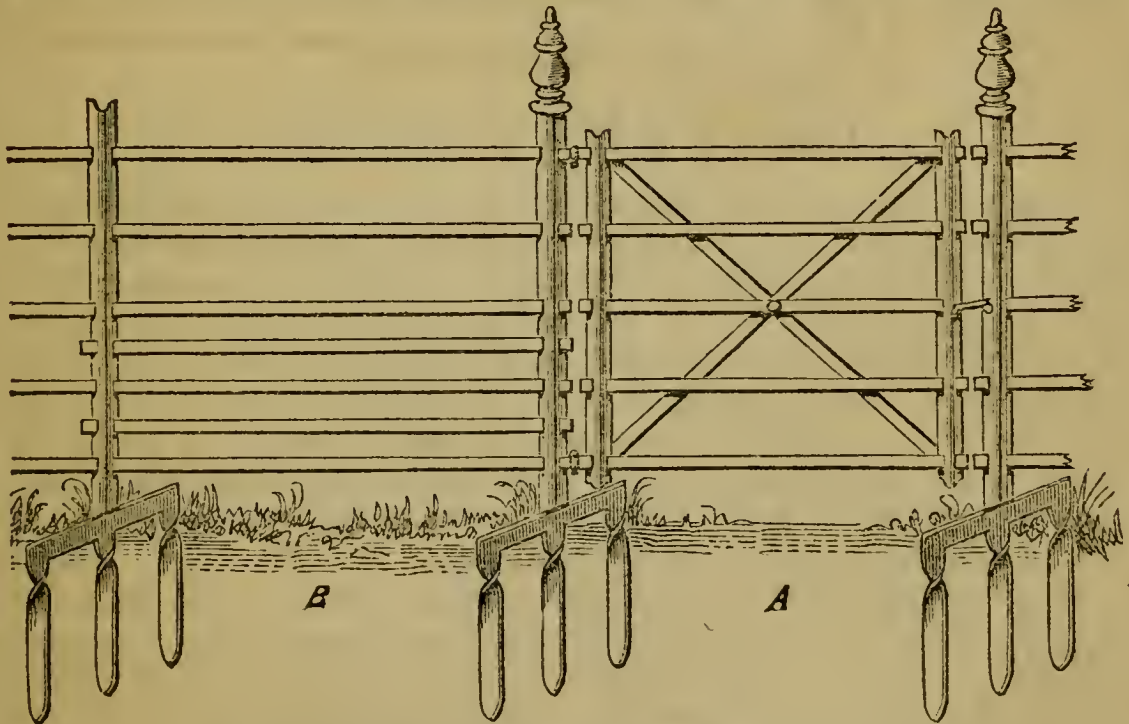


Fig. 73—HURDLE FENCE (WITH FLAT BARS) AND GATE.

zontally. In this position they cannot be withdrawn, and if the short end of the wire be *bent out*, they are held so as not to draw out on either side. This figure shows the exact or natural size of the post and of the wire, which is No. 3, the smallest that should be used in fence-



making. The *end posts* must be braced in the most secure manner, or a large tree may be used—the intermediate posts may be set in a hole made with a crowbar, and gravel firmly rammed about them.

A hurdle fence made of flat bars, (with a gate,) is represented by fig. 73. Its cost is \$2.50 to \$5 per rod. The rails are bars an inch wide, and an eighth of an inch thick. The posts are six feet apart, terminating at the bottom in three prongs, each a foot long, which entering the ground at right angles to the fence, hold it firmly in its position. This fence is easily moved, and one man may set up sixty rods in a day.

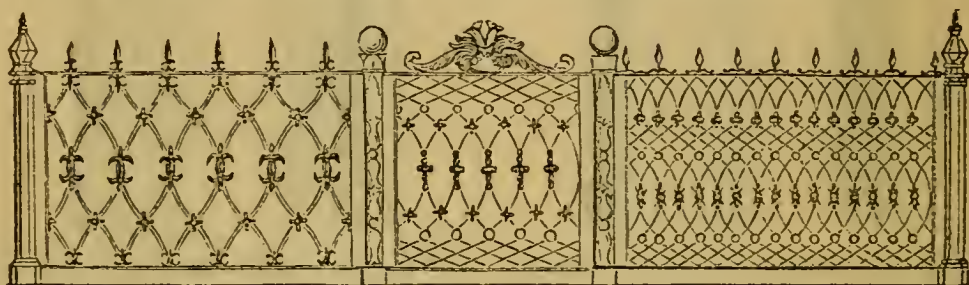


Fig. 74—FENCE FOR TOWN OR CITY LOTS.

A more elaborate and costly iron Fence, intended for the small lots of towns and cities, is shown in fig. 74. The left-hand portion of this fence varies in cost from \$2 to \$3 per running foot; the central is \$1.75 to \$2.75; and the right-hand portion \$1.75 to \$2.

## UNDER-DRAINING.

There are very few of the best soils that do not need artificial drainage. Lands that are tenacious enough to hold manures well, do not allow water to pass rapidly through them. Eight inches of such soil, saturated with water in spring, cannot quickly become dry, if all this water must creep slowly and silently downwards through the particles of earth on a broad ten-acre field. It has been shown that a single acre of soil a foot deep, holds at a wet season a *surplus* of more than two thousand barrels of water, which if discharged would leave the land moderately moist, and right for vegetation. The only way to get rid of this flood promptly, is to provide artificial channels for its discharge.

There are some sandy and gravelly soils that do not require drainage, but they can never be brought permanently to the highest state of fertility, as they do not contain clay enough to absorb and hold manure. There are also some heavy soils which have a natural drainage of porous gravel or fissured rocks beneath; but these are rare instances. As a general rule, then, every farmer whose lands are not thin sand or hungry gravel, should prepare for the thorough and systematic underdrainage of his whole farm.

The advantages are great in many ways. 1. The land when thoroughly drained may be worked at almost any time, the owner not being compelled to wait till the best time for sowing or cultivating has past. 2. Crops may be planted *early*, and sometimes doubled from this cause alone. 3. Less labor will manage the farm, as there will be less time lost in waiting tediously for water to flow off. 4. Draining prevents very effectually all injury from drought, because if the soil does not become soaked and muddy, it keeps mellow and does not bake hard. 5. The soil thus being always mellow, it allows roots to penetrate it freely, and promotes the rapid growth of crops. 6. It admits the thorough admixture of manures through the mellowed mass, and its effect is thus much increased. 7. The soil, from its porous character, is a better non-conductor of heat, and the roots of plants are less injured by freezing in winter. 8. Drained soils do not heave by frost, and plants are not thrown out by freezing.

These and other advantages are so great, that many farmers who have underdrained their lands uniformly and thoroughly, have asserted that the expense (which is usually about \$30 per acre) has been fully returned to them by the increase in the two first crops. John Johnston of Geneva, N. Y., says these two crops have always repaid him; and on very wet land, the first crop has more than paid the expense, by its increase. He generally has on his drained and well-tilled land, over thirty bushels of wheat per acre, while his neighbors who cannot afford so expensive an operation, have repeatedly lost more than half theirs by the weevil, in consequence of feebler and later growth. Although the cost is \$25 or \$30 per acre, yet he can drain a large farm for \$400 or \$500—as follows: This sum will drain 20 acres the first year; in two years it will be returned in the increase, when twenty more will be completed—and so on till all is done. Gov. Wright of Indiana, said—"I knew a farm of 160 acres that was sold five years ago for \$500, but after an expenditure of less than \$200 in draining, the owner refused \$3000 for it." He had a neighbor "whose extra crop of corn paid the whole expense of draining the first year." An instance occurred some years since, where a four-acre field yielded the first year after thorough drainage, forty bushels of wheat per acre, that was only fit for a wet pasture before. The impossibility of producing large crops, even by high manuring, on wet lands, has been amply proved, and a case is mentioned in the Transactions of the New-York State Agricultural Society, where seven acres of low, wet land, although manured annually at the rate of twenty-five loads per acre, produced per acre only thirty-one bushels of oats; but after thorough underdrainage, the manure which had been locked up by the water which enveloped it, was immediately rendered effective, and the first crop, without additional manure, was eighty-nine bushels per acre.

*To ascertain where draining is required*, dig holes into the earth two to three feet deep (post-holes often answer the purpose,) and observe if



water remains in these holes during the wettest periods. If it soaks away within twenty-four hours through the porous subsoil, and leaves the bottom dry, then draining will be wholly unnecessary. But if the water remains several days, then artificial channels will be required to carry it off.

### LAYING OUT DRAINS.

Laying out the course of the drains to relieve the land of its surplus water, is an operation of great importance. If it is judiciously done, the water will be quickly and safely conducted away; if badly performed, much labor and expense will be lost, and the water, if reached, only carried from one place to flood another.

There are different modes of laying out drains, which may be comprehended under the two general heads of **SIMPLE AND EASY**; and, **COMPLEX AND INEFFICIENT**.

The former consists in adopting one general rule for all cases, namely, to run parallel drains by the shortest and steepest course down the natural slope of the land, at regular distances, usually about thirty feet apart. The latter requires an examination of the seams and strata of the soil and subsoil, and the position of springs and wet spots, and the adaptation of various crooks and side courses in the drains to meet all these points, without any regular system. The former, if applied to a gradually descending field, or to the side of a hill or slope of a valley, can scarcely ever fail of effecting a complete and thorough drainage of the whole surface,—for generally the surplus water at wet times is distributed evenly over the whole surface, and it will be carried off evenly and uniformly by this regularly distributed system; and even where there are springs, they will be approached within a few feet, and be generally tapped before reaching the surface, by some one or other of these drains.

Many pages have been written, in applying geological principles to the operation of draining; but with a few rare exceptions, all the rules thus developed have only served to make the subject more difficult to beginners, and more inefficient in practice. One of the leading characteristics of

this mode is to examine the strata, ascertain through what seams the water oozes out at the surface, and by judicious side ditches, running obliquely downwards, to tap and cut off these streams. The annexed figure

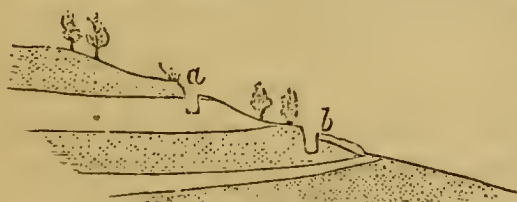


Fig. 75.

(fig. 75) exhibits the mode by which this is done, as described in standard works on draining. The dotted portion represents gravel or porous soil, alternating with hard, impervious layers. The ditch at *a*, cut through into the hard bottom, intercepts all the water from the upper gravel bed, and prevents it from injuring the soil below; while the ditch *b* is of no use, as it does not extend down far enough to reach the water which flows

over the second hard layer. This reasoning appears well on paper, but is defective when applied in practice; for if these ditches have any descent, as they must have in order to discharge, they must cross the hard strata, and can be therefore carried as the figure represents them, only for a very short distance. Incomparably better and more efficient is the



Fig. 76.

practice of cutting through all these strata at right angles, directly down the hill, as shown in fig. 76, each drain thus made forming a complete discharge for every accumulation of water. In extreme cases, very short side drains or branches may extend

laterally to cut off any unusual escape of water to the surface.

A mistaken practice is often adopted, by running drains obliquely instead of directly down hill, even in soils where there are none of the

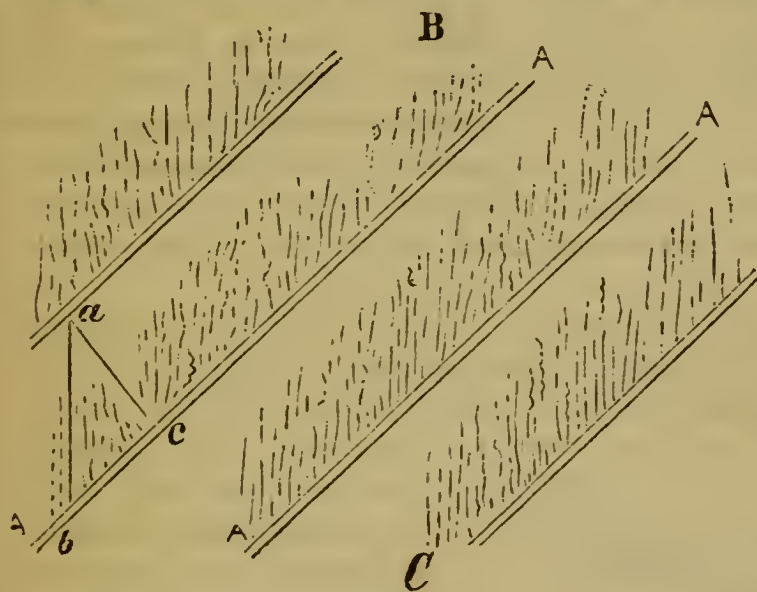


Fig. 77.

seams or layers just described, but where the subsoil forms a uniform substance, for the retention of water. The accompanying figure (fig. 77) will serve to show the error of this practice, A A A being the drains, and the dotted lines the channels of moisture, as they leach downward through the soil. The shortest descent

down the sloping surface is from B to C, the drains being placed at an oblique angle of about forty-five degrees. We shall suppose these drains to be two rods apart. Very little, obviously, of the water in the soil will pass into the one next *above* it, but will nearly all flow into the one below. Then, as from *a* to *c* is two rods or 33 feet, the distance from *a* to *b* will be 47 feet, or nearly *three* rods, which is the furthest distance for the water of the soil to soak into the ditches.

Let us now examine the other mode of laying the channels, namely, directly down hill by the shortest course.

B C, Fig. 78, is the direction of the descent, down which the drains are laid two rods asunder. These receive the water equally on both sides, the effect of each drain extending half way, or to the straight dotted lines. The direct distance is consequently but one rod, as shown by *c b*;



but as the moisture must flow obliquely to reach them, the distance be-

comes greater according to the degree of obliquity. If this obliquity is forty-five degrees, (or half way between perpendicular and horizontal,) as shown by the line *a b*, then the distance will be 23 feet, or only *one-half* that required in the former or oblique mode of ditching. Even if the moisture should descend so much nearer to a parallel with the ditches, as to pass sideways only half its own distance of descent, (as shown by *D D*,) *d e* being this distance; even in this case *d e* would be only about 37 feet, or a little over two rods, being *ten feet* less than in the former mode.

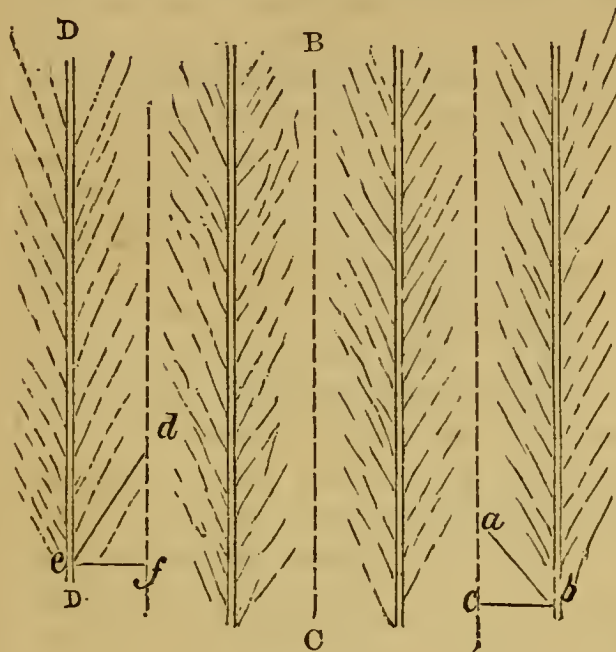


Fig. 78.

It may therefore be laid down as a safe rule, that the perpendicular drains would be as efficient at two rods apart, as the oblique ones at two-thirds of this distance.

But there are other influences still more in favor of the perpendicular mode. When the drains are oblique, the water does not find so ready a passage down them, and consequently if tile is used they must be of larger size. The passage

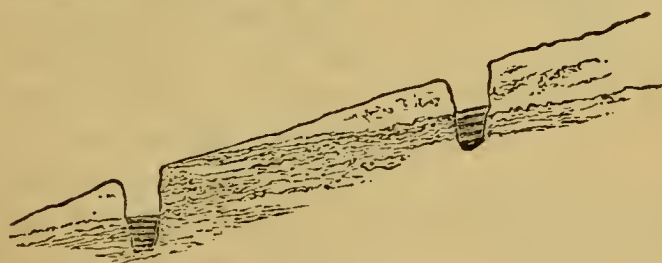


Fig. 79.

through them being somewhat obstructed by a want of descent, the water after it has filled them, tends to leak out on the lower side, (fig. 79) and if the subsoil is pervious, thus to add to

the amount of water in the soil below, instead of draining it. But when it once enters the *perpendicular* drains, it never passes back into the soil, but escapes by the channel thus made for it.

The question is sometimes asked, why the water will flow *sidewise* for reaching the perpendicular drains, and if it will find its way at all into them? The answer is, water always tends (unless an obstruction is presented,) to pass from a soil filled with it, to one that is dry or empty, in the same way that it will run out on all sides of a basket; and as soon as that portion nearest the ditch becomes drained, more remote portions flow in to fill the vacancy, till all escapes.

An eminent standard work gives the accompanying figure (fig. 80) of the mode for draining the sides of a hill. It is true that the drains rep-

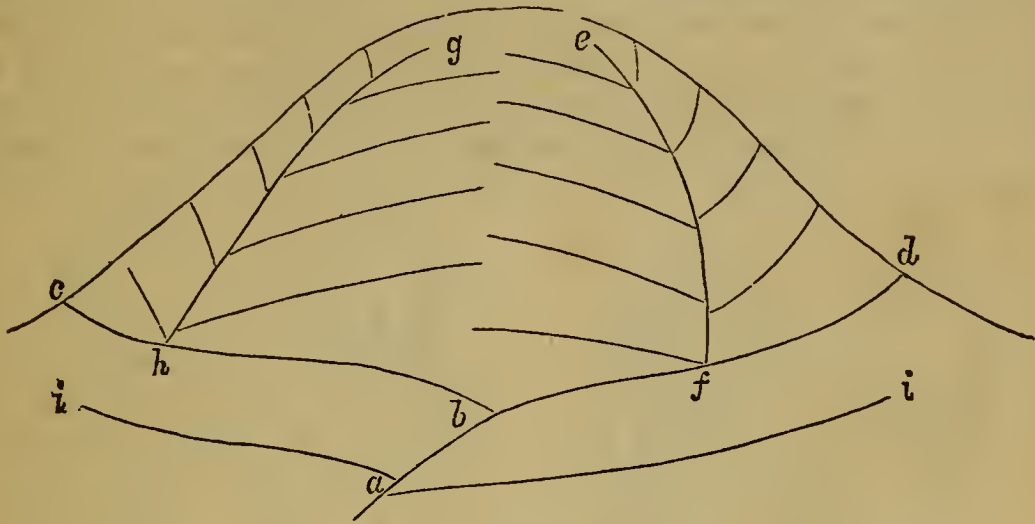


Fig. 80.

resented could hardly fail to carry the water safely down so steep a descent; but a more complete way is shown in fig. 81, where the water not only descends more readily and directly, but the drains are more

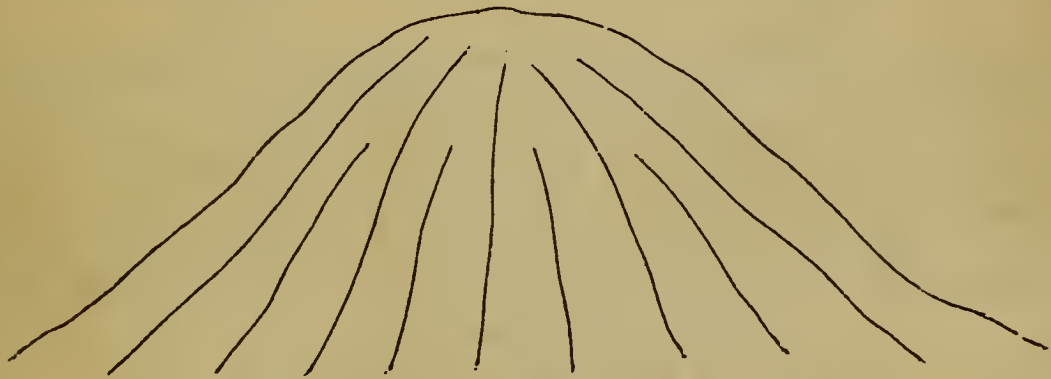


Fig. 81.

evenly distributed, and the same result is therefore effected at less cost. In fig. 80 there are many angles or corners with a drain on each side

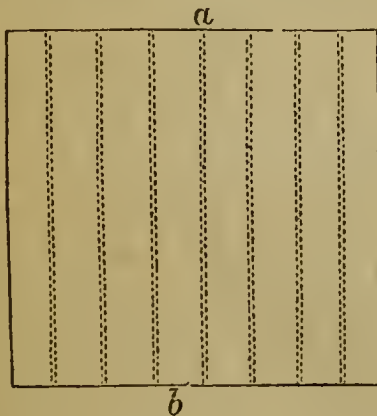


Fig. 82.

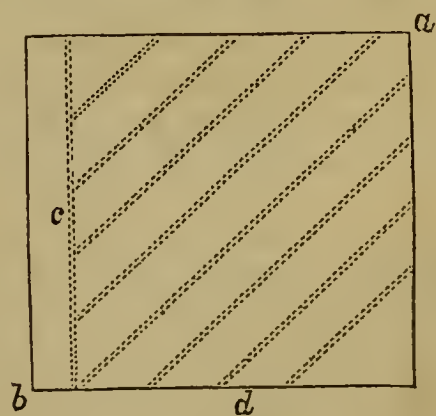


Fig. 83.



unnecessarily near; in fig. 81 there is no surplus work of the kind, and hence it is more economical.

*Laying out Drains on Irregular Surfaces.*—Where there is a continued slope from one side of a field to the other, nothing is easier than to determine the position of the drains, as, for example, in fig. 82, the descent being direct from *a* to *b*; or in fig. 83, where the slope, although diagonal, is uninterrupted from *a* to *b*. In the latter instance, if the

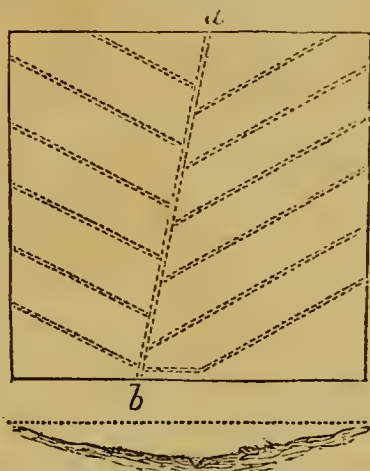


Fig. 84.

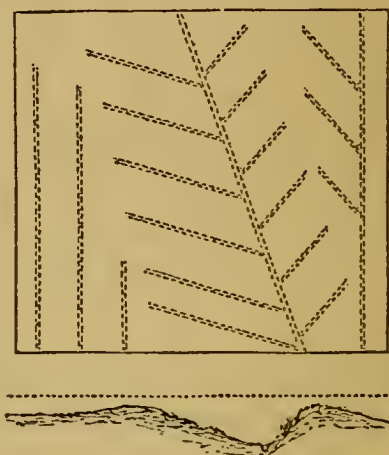


Fig. 85.

drains may be continued on into the next land, they may simply pass the boundary as at *d*; but if another owner possesses the adjoining field, it may be necessary to collect a part of the drains in one larger one, as at *c*. If the field occupies a hollow or valley, as shown in fig. 84 by the profile beneath, a large main drain must be made through the bottom of the valley, and the other drains conducted into it. A more irregular surface is shown by the profile at the bottom of fig. 85, and the drains are seen as corresponding to this surface.

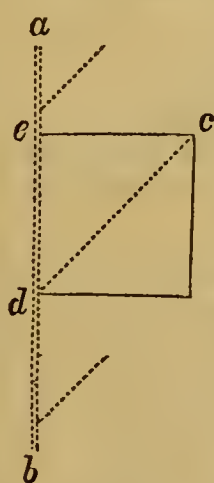


Fig. 86.

In order to determine at *what angle* the side drains should enter the main one, the relative rate of descent of each must be ascertained. If, for example, the descent of the main drain *a b* (fig. 86) in the bottom of a hollow, is one foot in ten; and also the slope of the sides, *c* to *e*, is one foot in ten; then the side drain must make an angle of forty-five degrees, or form the diagonal of a square between the two, *c* to *d*. But if, as in fig. 87, the descent from *a* to *b* is *one* foot in ten,

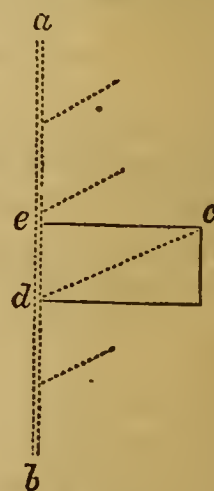


Fig. 87.

and from *c* to *e*, *two* feet in ten, then the angle must be sixty-seven and one-half degrees, or the side drain form the diagonal of a parallelogram twice as long as wide. The same rule will apply to any other degree of descent. The reader may understand the subject more clearly by partly

opening a book, and representing by the facing leaves the sides of the valley.

**PARTIAL DRAINAGE.**—It sometimes happens that land is made up of wet hollows and dry knolls, irregularly distributed; and it becomes absolutely necessary to drain the wetter portions at once, in order to cultivate the field with any profit. Fig. 88 represents such a field, and the double

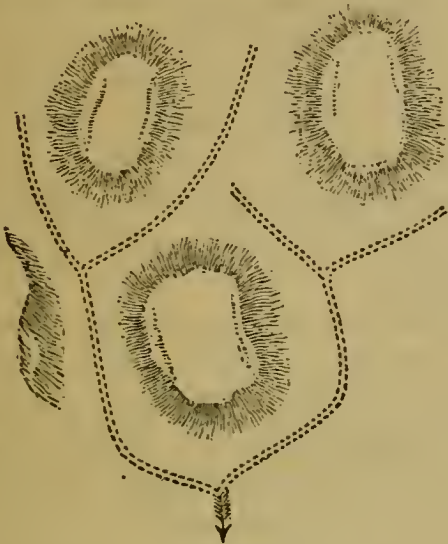


Fig. 88.

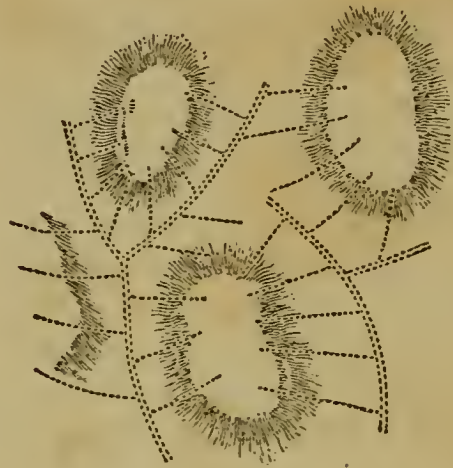


Fig. 89.

dotted lines show the position of the drains for carrying off the water from the hollows. If these hollows are not more than two or three rods wide, and the hills are of porous or gravelly soil, this may be all the drainage required; but if the hollows are wider, short branches at regular intervals will be needed, and if the hills are of a heavy or clayey nature, the benefits of complete drainage cannot be expected till side drains relieve the slopes, as shown by the dotted lines in fig. 89.

The natural course of streams as seen on a map, or the unobstructed descent of water on the surface of the land in a hard shower, may be nearly copied in laying out drains. When the face of a country has a regular slope towards a lake or river, the streams are nearly parallel, and take the most direct course downwards—they do not run obliquely, as some would lay their ditches. Among hills and through irregular hollows, the natural water-courses are the same as artificial channels should be; and the surplus water in a violent rain takes precisely the same direction down the sides of a valley, and enters the brook at the bottom at the same angle as already pointed out, allowance being made for accidental obstructions.

**SIZE OF THE BORE.**—The proper size of the tile for drains, to carry off the water freely, founded on an accurate estimate, appears never to have been treated of by any writer on draining. It is therefore hoped that the following suggestions may be useful.

It is necessary, first, to ascertain the amount of surplus water existing in an acre of soil, at the wettest period. This will vary considerably with



the nature and depth of the soil, but it may be laid down as a general rule that the soil and subsoil down to the depth reached by drains, when heavily saturated with water, contains a needless quantity, at least equal to a depth of three inches over the whole surface, which would be more than one thousand hogsheads per acre. The drains should be of such a magnitude as to carry this off in twenty-four hours. If each drain relieves a space of a rod on each side, or a strip of land two rods wide, it must be eighty rods long for an acre of this breadth, and carry off forty-two hogsheads every hour, forty-six gallons per minute, or three-fourths of a gallon per second. A tubular tile, two inches in diameter, and perfectly smooth and straight, would accomplish this if it had a descent of one foot in twenty. With ordinary imperfections, it would require a descent of about one foot in ten or twelve. If the descent was only one foot in fifty, it would require a three-inch bore.

The size of the drain is controlled by three causes: its rate of descent, its length, and the number of branches it receives. The length and number of branches may be included together, for three branches, each ten rods long, would be the same as a single channel thirty rods long. In all estimates, therefore, the aggregate length of the branches may be taken as that of a single drain; and the area they cover will readily show how much water is to be carried off, allowing, as before, one thousand hogsheads per acre. By the use of the following table, which the writer of this article has calculated for this purpose, and which is sufficiently accurate for ordinary use, the size of the bore for different areas and slopes may be readily determined. A deduction of one-third to one-half must however be made for imperfections in the tile and laying.

Diameter of Bore.	Rate of Descent.	Velocity of Current per Sec'd.	Hogsheads dis- charged in 24 hrs.
2 inches. ....	1 foot in 100 .....	22 inches. ....	400
“ .....	“ 50 .....	32 “ .....	560
“ .....	“ 20 .....	51 “ .....	900
“ .....	“ 10 .....	73 “ .....	1290
3 inches. ....	“ 100 .....	27 “ .....	1170
“ .....	“ 50 .....	38 “ .....	1640
“ .....	“ 20 .....	67 “ .....	3100
“ .....	“ 10 .....	84 “ .....	3600
4 inches. ....	“ 100 .....	32 “ .....	2500
“ .....	“ 50 .....	45 “ .....	3500
“ .....	“ 20 .....	72 “ .....	5600
“ .....	“ 10 .....	100 “ .....	7800

For very short drains the preceding table would not answer, as it requires some length to give the water its full velocity.

**LEVELING.**—Where land is nearly level, it becomes important to measure the descent accurately, in order to lay the drains where they will be most effective; and where the descent is considerable, it is desirable to know the degree of slope, in selecting tile of the proper size, according to the preceding table. Novices in draining often follow no other rule than to “cut and try”—that is, after the ditch has been cut, they turn the water in, and if it forms pools along the bottom, they have to re-dress

it; but if the water happens to run the wrong way, they may be compelled to dig the whole over again. This is a bungling and costly way of doing the work. A ditch should be so laid out, that the owner will know confidently before-hand what will become of every drop of water that enters it. A few minutes previous attention may save days of labor.

The simplest level for drains is the *span level*, shown in fig. 90. It is especially convenient for giving a uniform descent to the bottom. Two

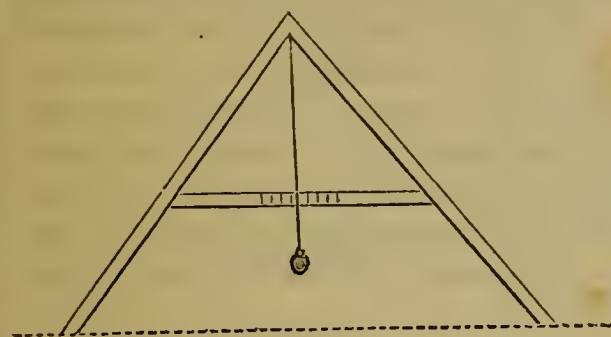


Fig. 90.

narrow strips of board are fastened together as represented, with a bar or brace connecting them. The plumb being suspended from the top, it is first placed on a perfectly level floor or sheet of ice, and a mark made on the cross bar. A block an inch thick is then placed under one leg, and another mark made. The leg is then raised another inch, for a third mark. In this way the cross bar is accurately graduated. By measuring the distance of the two legs apart, the rate of slope may be now accurately determined. If, for instance, the legs are eight feet three inches or half a rod apart, the first mark will indicate a descent of two inches per rod; the second, four inches, and so on.

Where greater accuracy is required, as in long and nearly level ditches, the "water level" may be used. It may be made of a lead tube about

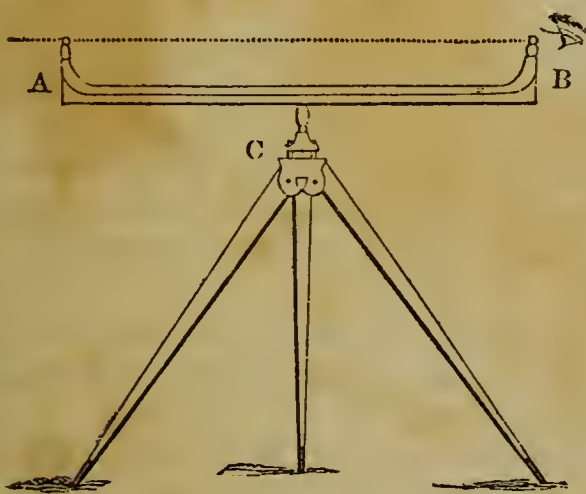


Fig. 91.

three feet long, bent up an inch or two at each end, and stiffened by fastening to a wooden bar, A B—(fig. 91.) Into each end is cemented, with sealing-wax, a small and thin phial with the bottom broken off, so that when the tube is filled with water it may rise freely into the phials. If the tube be now filled with water colored with cochineal or any dye-stuff, and then placed upon the tri-

pod, C, by looking across the two surfaces of liquid in the phials, an accurate level may be obtained. When not in use, a cork is placed into each phial. "Sights" of equal height, fastened to pieces of cork floating on the water, as shown in fig. 92, give a more distinct line for the eye. The sights are formed of fine threads or hairs stretched across the square openings. To ascertain whether these threads are both of equal heights



Fig. 92.



above the water, let a mark be made where they intersect some distant object; then reverse the instrument, or turn it end for end, and observe whether the threads cross the same mark. If they do, the instrument is correct; but if they do not, then one of the sights must be raised or lowered until it becomes so.

**DEPTH AND DISTANCE OF DRAINS.**—Experience has determined that twenty-five to thirty feet apart, for compact or clayey soils, and thirty-five to forty for light and porous soils, are proper distances for accomplishing speedy and effectual drainage. Three feet is the most economical depth. When draining was first introduced into some parts of Britain, the drains were made one and a-half or two feet deep, and eighteen feet apart. After many thousand miles were laid, they became defective. They were then made about three feet deep, and twice as far apart. This cost less, and was more efficient. A greater depth and distance was again found unfavorable.

**MODE OF CUTTING DRAINS.**—British works, and American copied from them, figure and describe twenty or thirty different kinds of tools for cutting ditches. Some of them as usually made, are heavy and awkward, and others are very rarely used. A spade for common earth, a shovel for loose earth, a pick for hard subsoil, a narrow spade for the deeper portions of the drain, a long-handled pick for the operator to work the narrow bottom while standing above, and a narrow scoop-hoe for cleaning out the narrow bottom, (fig. 93) are



Fig. 93.

all that are commonly required. These will enable the digger to cut a ditch three feet deep, a foot wide at the top and four inches at bottom, (which is wide enough for tile,) by the removal of less than half the earth needed for the free use of the common pick and spade, the workman standing in the bottom. Where, however, stone are used for filling, a greater width is required.

The labor of cutting drains will be greatly lessened, by first plowing two furrows from each other, and afterwards repeating them, and then shoveling out the loose earth. A subsoil plow will next loosen up the earth for shoveling, down to a depth of more than two feet. Plows, like subsoilers, made on purpose, and capable of running down three feet deep, have been manufactured in different places, and have been found to save nearly one-half the labor in hard soils, by obviating the use of the pick.

*The cost* of cutting drains varies greatly with the soil. In very hard and strong subsoils, the work cannot be done for less than thirty cents per rod, if all done by hand; while in common or easy soils it may be performed for twelve or fifteen cents.

*Ditching machines*, as yet constructed, have proved too costly for common farmers, and are not applicable to stoney land.

**MODE OF FILLING DRAINS.**—Tiles form the most perfect channels for underdrains. They may be tubular, as shown in fig 94, and laid in the

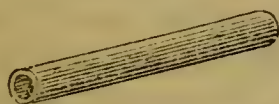


Fig. 94—PIPE DRAIN.

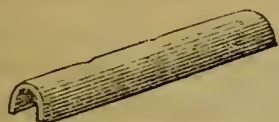


Fig. 96—HORSE-SHOE TILE.

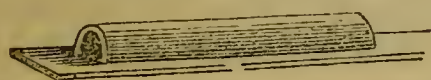


Fig. 97—HORSE-SHOE WITH SOLE.

bottom as represented by fig. 95; or they may be in the horse-shoe form, like fig. 96, which answers a good purpose when placed on a very hard or rocky bottom; or if the bottom be not hard, which is most usually the case, plates of tile, termed *soles*, are first laid, to prevent the heavy weight of earth above from sinking the edges into the soil—(fig. 97.) This



Fig. 95.

is, however, complex and expensive, and hence the tubular tile is now generally used. They are most rapidly and easily laid by means of the tile-hook, (fig. 98) which is simply placed within the bore, and they are lowered to their place. A little earth is then rammed down on each side, to keep them straight until covered.

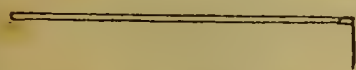


Fig. 98—TILE HOOK.

Where the soil is quite soft, they must be laid upon flat stone, tile soles, or narrow boards of durable wood. They may be first covered with straw, small brush, gravel or small stone, or if collars are placed on the joints, inverted turf may be laid in direct contact with the tile. If in hard, clayey earth, small stone alone will answer, with straw or turf placed upon them before the earth is filled in. But if the subsoil approaches the nature of quicksand, more care will be required, and fine gravel, with a heavy coating of straw, may be necessary.

The importance of filling most of the ditch above the tile with stone, is sometimes urged, under the belief that water cannot find its way down to the bottom through three feet of earth. But a moment's thought will show the fallacy of this objection, for if the drain will carry off the water lying one rod distant horizontally, it will convey away with far greater ease what happens to be only two or three feet directly above.

It was once the practice to perforate tile with small holes, to let the water pass into them; but it has been since found that the joints at the ends will admit all that is required.

**Cost.**—Tubular tile, with two-inch bore, (which is large enough generally, except for main drains or those nearly level,) usually costs about ten dollars at the manufactory, for enough to lay sixty rods, and forms the cheapest filling. It is true that stone may be often had upon the fields for the picking; but the increased width required for the drain, and the additional time in laying them, will usually be found more than ten dollars



for the sixty rods. Tile usually forms the most durable drains. John Johnston of Geneva, N. Y., found those which had lain eighteen years, as perfect as the day they were laid.

Tile, however, is not always to be had; and it is often an important object to get rid of stone; hence stone drains may sometimes be advisable. They are occasionally made by throwing small stone promiscuously into the ditch; but unless the descent is very steep, or the quantity of water extremely small, they drain slowly and imperfectly, the water filling them up several inches.

The most common way, and usually the best, for filling stone drains where the stone are nearly *round*, is shown in fig. 99, made by just laying a row of small stones on each side of the bottom, leaving an open channel between them, about three inches wide, and then covering this channel with flat stones, and filling the ditch with small ones promiscuously

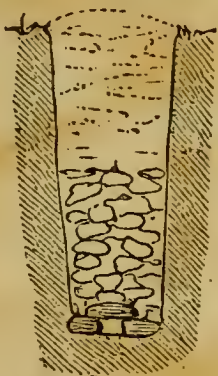


Fig. 99.

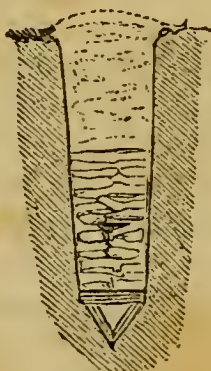


Fig. 100.

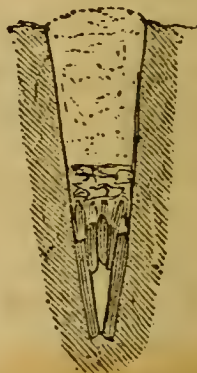


Fig. 101.

thrown in, to within about 15 or 18 inches of the surface, so as to be below the reach of the plow—and the remainder with earth. It is hardly necessary to remark that the upper surface of the stone must be either covered with coarse gravel or small flat stone, and then with straw or inverted sods, to exclude the earth from the stones; and if the soil is nearly free from clay, more care in this respect will be needful,—and perhaps a covering of hard-wood slabs will be necessary to keep the earth to its place. If the bottom of the drain inclines to quicksand, a layer of flat stones must be first laid on the bottom.

The chief objection to the mode just described, is the necessity of cutting a ditch nearly a foot wide at the bottom, to allow laying the channel. Flat stones, on the contrary, obviate the labor of cutting a wide ditch; the channel being constructed by placing three flat stones together, as shown in fig. 100. The bottom of the ditch is cut with a pointed spade, so as to have an angular trough; flat stones are then selected, all of the same width and fitted into and meeting each other at the bottom, and then covered by a third flat stone reaching across them. The ditch above this is partly filled with irregular fragments of stone, and covered as already described.

A still better way is shown in fig. 101. The ditch is cut with the narrowest kind of spade—a mode familiar to English ditchers, and which they execute with great expedition. Flat stones, without regard to their exact width, are placed against the sides, open at the top. Into this opening, one or more thicker flat stones are thrust, as represented in the cut, and the drain then filled as before mentioned. The advantage of this mode is in obviating the necessity of selecting the stone, as almost any width will answer.

The two last modes, if well made, will last as long as tile-drains; as the earth cannot fall into them from the sides, nor rise from the bottom, even if of a quicksand nature; and in the last described, the stones being mostly vertical, admit the free descent of the water from above.

BRUSH DRAINS, on land easily dug, and which affords a rapid descent, have been found to answer a good purpose. As they cannot carry off

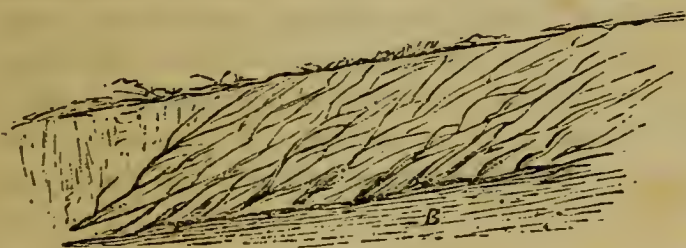


Fig. 102.

much water, they should never be very long, nor used for main drains. They should never be employed on nearly level land. Being nearly excluded from air, the brush

will last many years. Some kinds, as cedar, will last much longer than others.

The drain for brush is dug like any other drain, but is best if a foot or more wide. The brush may be cut a few feet in length, and should not be more than an inch or two in diameter. If the branches are straight and nearly parallel, they may be larger and longer than if crooked and spreading—in the latter instance they must be cut quite short, or they will not lie well. Commence always at the *upper* end, and let the butts rest on the bottom of the drain, with the tops pointing upwards, or *from* the descent.

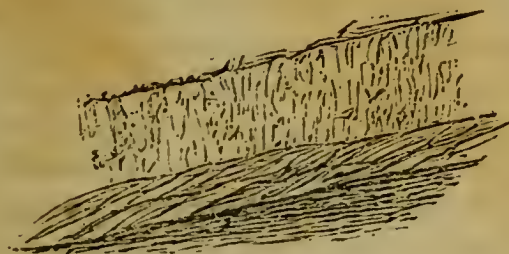


Fig. 103.

This position tends constantly to throw the descending water to the bottom or lowest part of the drain. If a sufficient quantity of brush be laid in to fill the ditch, (fig. 102) it will occupy, after being trodden down and the earth filled in, only about one-third of the ditch—(fig. 103.) Inverted turf forms a good cover for the brush before throwing the earth in. The sides should be nearly perpendicular, or the brush will not settle well.

Timber, in the form of scantling and narrow boards or slabs, has been sometimes used for drains, but it is costly, decays in a few years, the air entering the channel freely, and is to be recommended only in extreme cases, or where other materials cannot be procured.



## CULTURE OF THE PEAR.

On several accounts, the pear possesses advantages over other fruits. The first is its delicious quality, as found in the finest varieties—its buttery or melting texture, and its delicious and perfumed flavor. In this respect it greatly excels the apple, and keeps nearly as well. Even the peach is scarcely superior, while it lasts only two or three days.

But the pear, like everything highly desirable and valuable, cannot be had without attention, labor and skill. There are only a few exceptions to this general rule. The relative prices of the apple and pear being about as one to ten, show at the same time the superior value of the latter, and the superior skill required to bring it to perfection.

The first questions that occur to every one commencing any branch of cultivation, are in relation to the probability of success, and the real value of the crop. The best answers are given by pointing to those who have made the experiment. If some have been uniformly and eminently successful, their mode of treatment must be examined. If others have as signally failed, the causes of their disappointment are not less worthy of attention.

The market value of good pears is a good indication or measure of the amount of attention which this fruit deserves. The following are a few examples. Dr. C. W. Grant of Newburgh, gathered 400 specimens from a tree of the Flemish Beauty only eight years planted, which he sold for \$30, or 13 cents each. T. G. Yeomans of Walworth, N. Y., sold in 1857, nearly his entire crop from several hundred trees of the Angouleme, at \$14.50 per barrel, or 12 cents each by the barrel. Very large specimens of this variety have in some instances retailed at a dollar each. Austin Pinney of Clarkson, N. Y., sold some of his pears in 1857, at 10 cents each, or \$18 per bushel. J. Stickney of Boston, obtained for his crop of the Louise Bonne of Jersey in 1856, \$10 per bushel. John Gordon of Brighton, near Boston, sold Bartlett pears raised with the highest cultivation, and with skillful management in preparing for market, for \$10 per bushel, while good ones, with more common care, brought only \$3 per bushel. Ellwanger & Barry of Rochester, sold their best well-ripened Glout Morceau pears in winter, at \$3 per dozen, and others have done the same.

There are very few if any old bearing orchards of standard pears in this country; but single trees in numerous instances have yielded for successive years, \$20 or \$30 per tree—which would be at the rate of three or four thousand dollars per acre, if a whole orchard was equally successful. The reason of this deficiency of old orchards, is the long time required to bring orchards into a full bearing state, nearly all that have been set out being yet young. But as dwarf pears come quickly into bearing, we

have already many examples of their great success. Among them are the following:

T. R. Austin, near Boston, (says Col. Wilder,) set out 500 dwarf pears, about twelve years since. They commenced bearing in about three years, and have borne regular and abundant crops ever since. An account was kept of the sales from them for the past six years, which amounted to \$3,408. They occupy about an acre.

Ellwanger & Barry of Rochester, have a large continuous number of trees of Louise Bonne of Jersey, set out eight years, which the writer found yielded one to one and a half bushels per tree, or at the rate of at least 500 bushels per acre. Three dollars per bushel was the lowest price on the tree—which would be \$1,500 for an acre in one year. The two previous years the crop was nearly the same. When four years old, they yielded at the rate of \$500 per acre. They also had a larger plantation of dwarf Virgalieus or Doyennes, which gave the fourth year at the rate of \$500 per acre, and about the same the sixth year.

W. P. Townsend of Lockport, had about an acre of dwarf pears of different sorts, that bore the fifth year from the bud, forty-one barrels, selling at \$10 per barrel, or \$410 for the acre. The quince stocks on which they stood had been set out seven years before, and had not been removed.

T. G. Yeomans of Walworth, N. Y., has large plantations of dwarfs, about eight years old. They are eight feet apart, and are cultivated and the soil kept perfectly clean by two horses walking abreast, at less cost than a corn-crop requires. They have yielded from half a bushel to a bushel per tree, and have sold for \$14 per barrel—which is at the rate of about \$2,000 per acre.

The preceding examples are purposely selected as a few of the most successful, to show what may be accomplished by good treatment. Those varieties were chosen for the experiment, that long experience had proved best for growing on the quince; and good and enriching cultivation was given. The expense, however, after the plantation was made, was not greater than is required to keep a field of corn or potatoes in good condition,—horse or hand labor being employed on both.

The question now occurs,—Are these fair samples of the success usually attending the planting and culture of dwarf pears? The answer is,—Very far from it! A tree-salesman of extensive observation, lately gave it as his opinion that not more than one dwarf pear tree in a hundred was treated with that care that insured successful bearing. Doubtless this was an over estimate, but so great is the general neglect that probably not one in twenty fully succeeds.

The causes of failure are worthy of examination. Formerly there were many losses from working those sorts on the quince that were entirely unfitted for the purpose. In other instances poor stocks were used, none



but the large and late-growing French varieties being of much value. But the greatest of all causes of failure has been and still is *neglected cultivation*. There is a *diseased public habit* in relation to the care of all fruit trees, that appears to be incurable. Planters listen to admonitions on the subject, admit the full force of all that is said, and then, as they do in case of common sermons, go and immediately practice the contrary. The writer has just met with a farmer who set out dwarf pears, and *sowed oats among them!* He was asked if he would sow oats among his corn? "Why, no; I s'pose this is a very bad way to treat them, but you know every body does so!" An intelligent cultivator of other crops wondered greatly why his orchard of dwarf pears did not flourish, although he spaded a circle around each as they stood in grass, as often as once a year. He might with equal propriety have been surprised that his horse grew poor, although he never omitted feeding him once a month!

It may be laid down as an unalterable rule, that *no young orchard can flourish, and that one of dwarf pears cannot live, unless a complete system of broadcast cultivation is applied to it*. Digging circles with the spade is wholly insufficient. As commonly performed, this practice does not benefit a tenth part of the roots, often not a hundredth. Writers generally say that the roots spread as wide as the spread of the branches; while in reality they cover a surface ten times as great as this rule would indicate. The nearest general rule is that the roots run as far from the foot of the stem as the height of the tree. If, therefore, the tree (fig. 104) is ten feet high, the extent of the roots from *a* to *b* will be twenty feet. A young orchard of such trees, therefore, planted twenty feet apart, will have



Fig. 104.

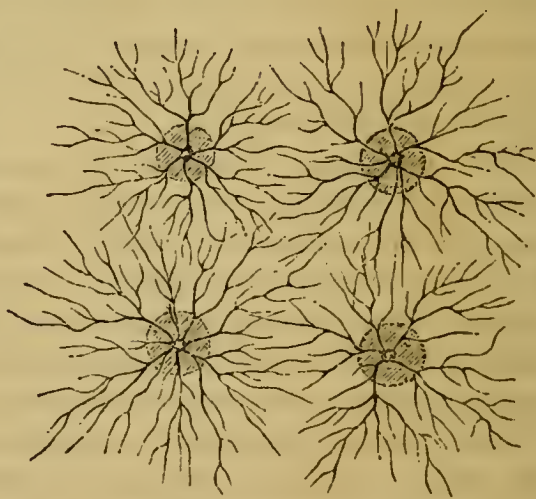


Fig. 105.

already covered the whole surface, and to dig small circles about the tree, as shown by the shaded portions in fig. 105, and the black part in fig. 104, would be to leave the great mass of the roots wholly unreached by cultivation. Dwarf pears, it is true, have shorter roots than most other sorts, but they are still far beyond the effect of these narrow rings.

The mode of pruning has been distinctly described in former numbers of the Register.

## VARIETIES.

The older varieties are well known. In making extensive plantations, these should in all cases constitute the largest number, and none of them should be planted in large numbers, which have not been well proved in that particular locality. Some heavy losses have occurred by neglecting this caution.

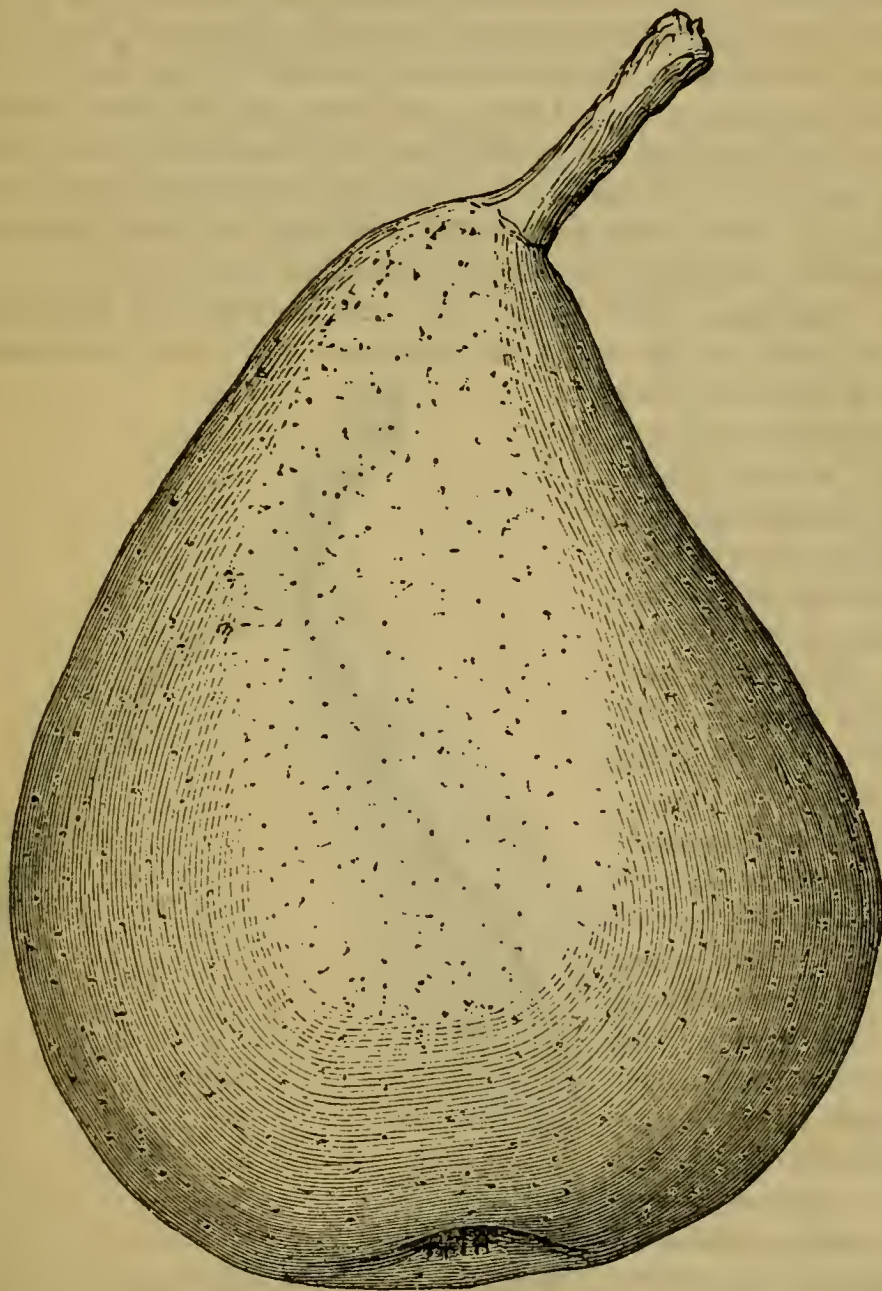


Fig. 106—BEURRE CLAIRGEAU.

A list only, of the well-proved varieties is sufficient. Of the newer sorts which promise to be valuable, more particular descriptions will be desirable.

*For Pear Stocks exclusively.*—The *Bartlett* is perhaps the most certain



and valuable, after which may be named the *Seckel*, *Sheldon*, *Belle Lucrative*, *Flemish Beauty*, *Lawrence*, *Winter Nelis*. The Washington, Autumn Paradise and Beurre Bosc, are fine pears, growing only on pear stocks.

*For Quince Stocks exclusively.*—Louise Bonne of Jersey, Duchess Angouleme, Beurre Diel, Easter Beurre, Glout Morceau.

*Growing well on both Pear and Quince*, are Virgalieu or Doyenne, Buffum, Rostiezer, Urbaniste, Winkfield, Tyson, Beurre d'Anjou, Madeleine, Nouveau Poiteau. Belle Lucrative does well for the first ten years.

**THE NEWER VARIETIES.**—Among the many hundred new sorts introduced and examined of late years, some will doubtless prove of great value. A portion have been tested extensively for several years—others are less known. The great interest felt in relation to these newer sorts, has induced the preparation of the following list.

*Beurre Clairgeau.*—The large size, great beauty, fine quality, productiveness and *late ripening* of this new pear, and the handsome pyramid it forms on the quince, have given it great celebrity. A want of sufficient hardness, indicated by the effects of winter, in some localities, has somewhat lessened its high reputation. This defect may, however, on further trial, prove of comparatively small importance.

It is large, obovate, pyriform, the larger specimens generally distinct pyriform; skin yellow when fully ripe, sometimes nearly clear and smooth, and at other times, and particularly with larger specimens, coarsely dotted, and nearly covered with russet, often with a handsome crimson cheek towards the sun; stalk an inch long, not sunk at insertion; calyx in a moderate basin; flesh buttery and melting, sometimes granular, with

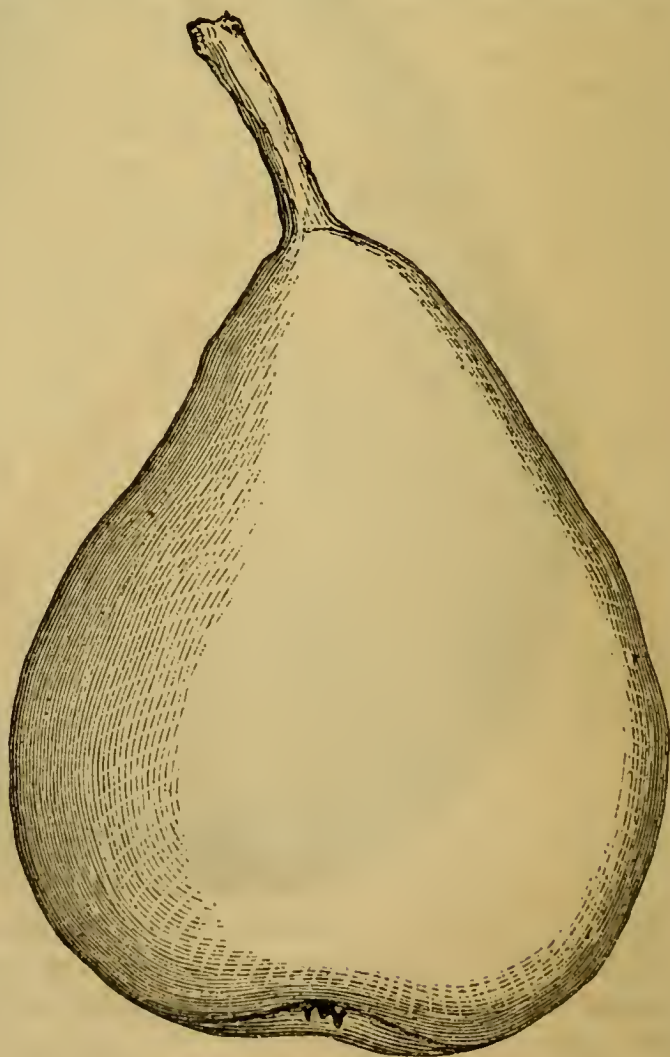


Fig. 107—BEURRE NANTAIS.

a "very good" perfumed flavor. The quality is somewhat variable—from "good" to nearly "best." On quince, the fruit is of larger size and of better quality than on pear stock.

*Beurre Giffard*.—Although the growth is slender and straggling, this is one of the best and most valuable of all early pears, ripening immediately after the Madeleine.

*Beurre Langelier*.—A large, light green pear, becoming pale yellow; fine grained, juicy, melting, with a rich flavor; ripening early in winter. Grows best on quince.

*Beurre Nantais* or *Beurre de Nantes*.—This pear promises to be of much value. The tree is an erect and vigorous grower, both on pear and quince, comes early into bearing, makes a fine pyramid, and is very productive. It has been cultivated many years in France, its place of origin, but not until recently have its merits become appreciated in this country.

It is rather large in size, (the drawing being made from a quite moderate specimen,) pyriform or pyramidal, neck narrow; skin greenish-yellow, with minute dots; stem nearly an inch long, not sunk; calyx in a moderate rather narrow basin; flesh buttery and melting, with a rich, agreeable, perfumed "very good" flavor. Ripens about the middle of autumn.

*Beurre St. Nicholas* or *Duchesse d'Orleans*.—A rather large pyriform fruit, and when well ripened, delicious; it is generally regarded as among the most valuable new autumn sorts.

*Beurre Sterkman*.—Fruit of medium size, short obovate, flesh melting, very juicy, with a rich vinous,

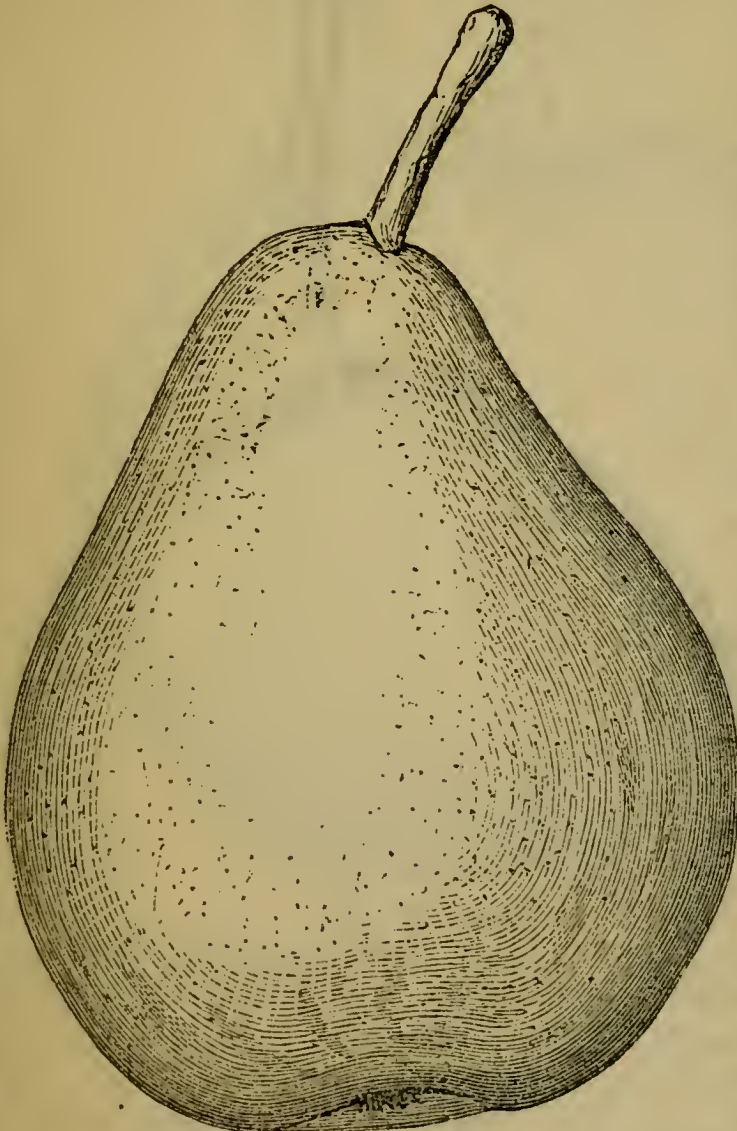


Fig. 108—COMTE DE FLANDRE.



sub-acid, perfumed flavor. Season after mid-autumn. Tree vigorous and productive.

*Beurre Superfin*.—Size medium, flesh exceedingly juicy, buttery, melting, with a brisk sub-acid flavor. Ripens about mid-autumn. Tree a vigorous and handsome grower, and does finely on the quince.

*Brandywine*.—One of the finest early pears—size medium, pyriform, partly russeted, flesh very juicy and melting, with an excellent flavor. It forms a fine pyramid on quince.

*Church*.—A fruit of medium size, the flesh buttery, melting, and with an exceedingly rich, sweet, and highly perfumed flavor, unvarying in quality. It is uniformly productive—a large tree of this variety at New-Rochelle, N. Y., affords fifteen to twenty bushels annually.

*Comte de Flandre*.—Rather large, pyriform, oblique; skin greenish-yellow, becoming yellow at maturity, with numerous small dots, and marked with thin russet; stem an inch long, set under a lip, with little or no depression; calyx in a shallow basin; flesh very juicy and melting, with an agreeable, refreshing flavor; quality "very good." Tree vigorous and productive. Season late in autumn. Although this pear is hardly so high flavored as some of our finest varieties, yet when well ripened, its juiciness and agreeable aroma render it one of the most delicious sorts.

*Des Nonnes*.—Of this pear, described by Charles Downing as *Beurre de Brignais*, we have been furnished fine specimens by THORP, SMITH & HANCHETT of Syracuse, who have fruited it for several years. Should

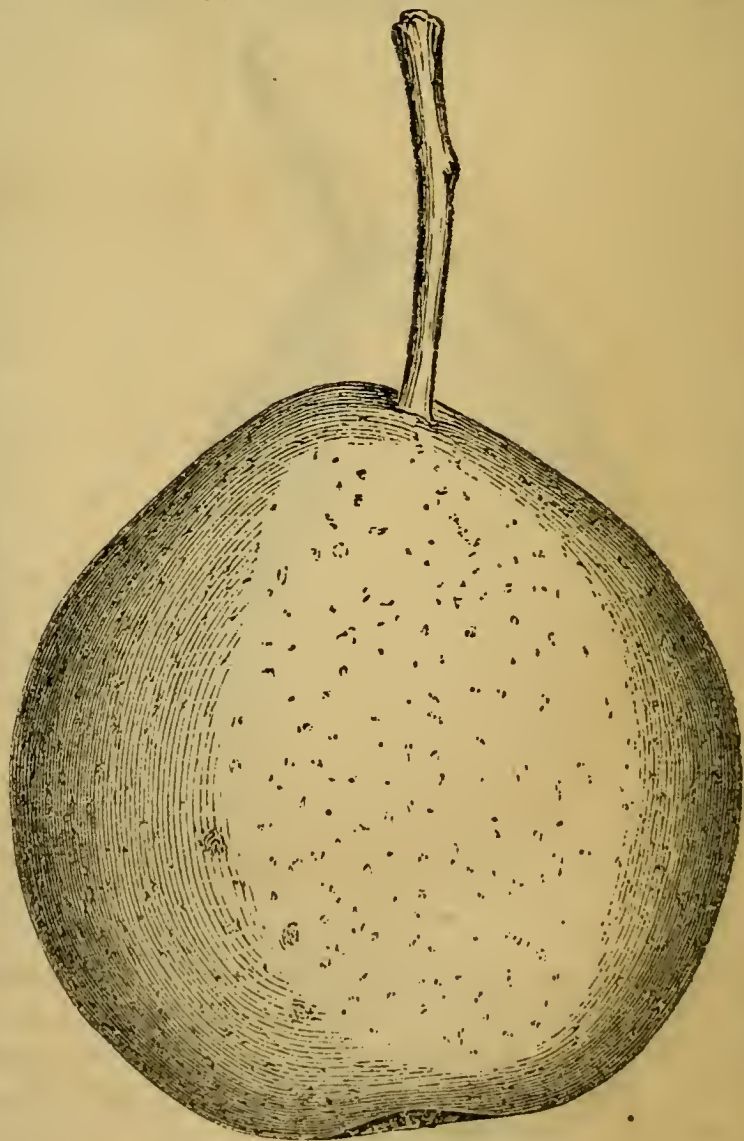


Fig. 109—DES NONNES.

it prove *always fair*, it will undoubtedly be a great acquisition. They have stated that it is a vigorous grower, good bearer, and that it succeeds finely on the quince. We know of no pear that, all things considered, has a more delicious flavor than the specimens sent us.

In size it is medium—form roundish turbinate, obtuse. Skin greenish-yellow, becoming a clear yellow, with numerous greyish brown dots—sometimes with a faint tinge of red towards the sun. Stalk an inch and a-half long, moderately slender, set in a slight depression. Calyx rather small, often closed, in a small wrinkled basin. Flesh juicy, and exceedingly melting when at perfection, very sweet, perfumed, and with an

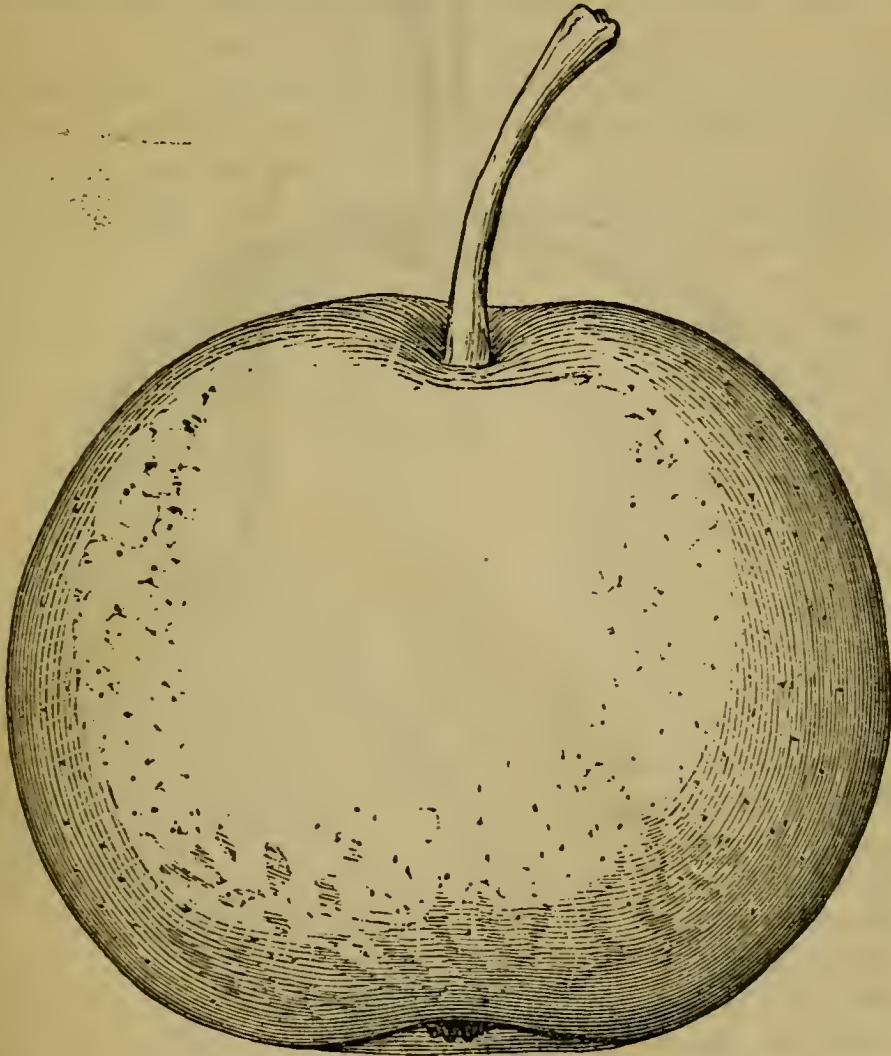


Fig. 110—DOYENNE ROBIN.

exquisite flavor—"best." Ripens rather before mid-autumn. It is probable that its extreme delicacy requires that it should not only be well-grown and ripened, to attain its highest perfection, but that the precise point of maturity should be chosen when it shall have attained fully its fine melting texture.

*Doyenne d'Alencon*, or *Doyenne d'Hiver Nouveau*.—This is one of the



most valuable of all the new winter pears. It is medium or rather large, obovate-pyriform, dull yellow, and when well ripened of excellent flavor.

*Doyenne Goubalt*.—Size medium or rather large, flattened-obovate and acute, dull pale-yellow, stem short and thick, flesh melting, juicy, with a sweet, rich, aromatic flavor. First half of winter—its value depends on being properly ripened.

*Doyenne Robin*.—Size above medium, round, nearly regular, or obscurely and obtusely ribbed; skin pale yellow, usually russeted about the crown; stalk an inch and a-half long, generally set in a rather deep smooth cavity, sometimes merely planted on the surface; calyx in a smooth

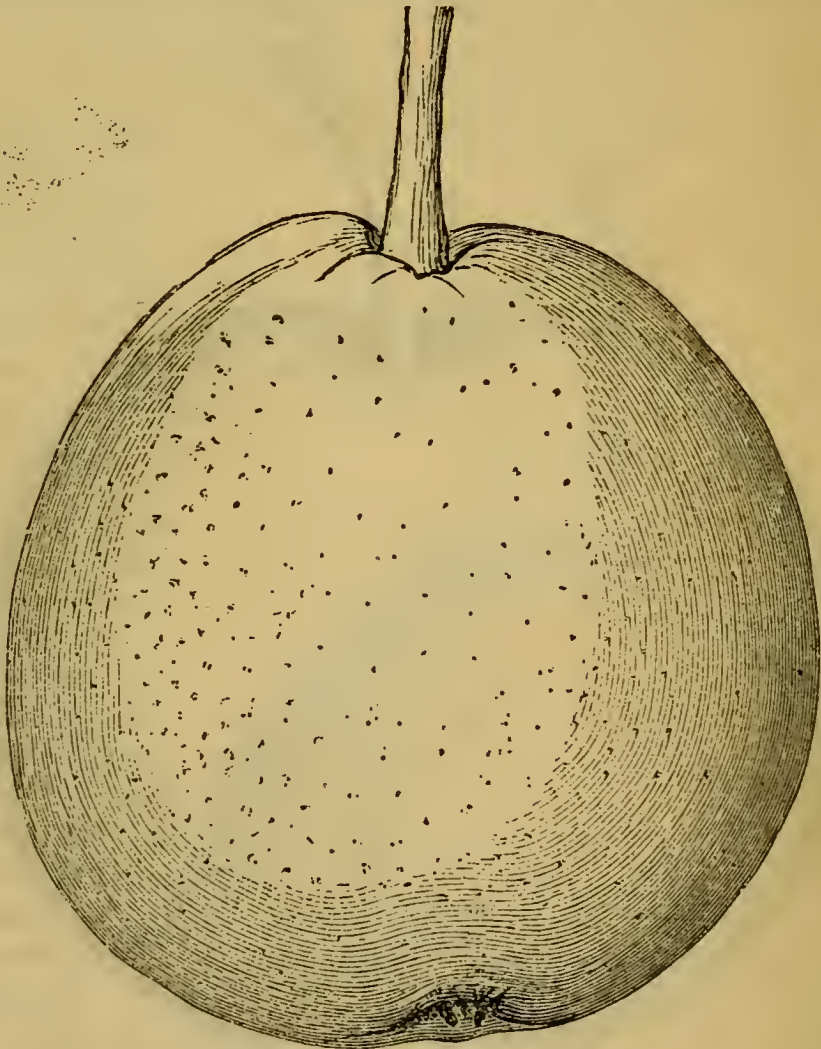


Fig. 111—DOYENNE SIEULLE.

or scarcely furrowed basin; flesh buttery, slightly melting, with a fine "very good" flavor—not equal to that of the Virgalieu nor so sweet. Tree a free grower and very productive. Season mid-autumn.

*Doyenne Sieulle*.—This pear, although well-known here for some ten or twelve years to several American pomologists, may properly be ranked among the newer sorts. The tree is an upright and vigorous

grower, and very productive; while its good quality, and period of maturity through the latter part of autumn, and often nearly to mid-winter, render it quite valuable. It is rather large, roundish, slightly obovate; color a rich yellow when ripe, often reddened towards the sun; dots on the surface rather small and not conspicuous; stem an inch and a half long, rather deeply set in a frequently wide and somewhat ribbed cavity; basin quite small, wrinkled; flesh nearly white, fine grained, buttery, with a mild, rather aromatic flavor; "good" or "very good."

*Howell*.—A large, fair and very productive variety, the tree coming into early bearing, and likely to prove one of the best for market, although the flavor is not often of the highest quality.

*Fondante de Noel*.—Medium or rather small, obtuse-pyriform, pale greenish-yellow, with a red cheek, flesh whitish, melting, juicy, very good. A seedling of the *Passe Colmar*, ripening earlier, and of similar flavor—a fine late autumn sort.

*Josephine de Malines*.—Medium in size, sometimes small, flesh melting, juicy and rich—ripens in winter. The tree is vigorous and productive, and forms a fine pyramid on quince.

*Laure de Glymes* (of Bivort).—This is a new European variety, which has not yet been much tested in this country, but so far appears to be worthy of attention. It is a good grower on quince, and productive. It

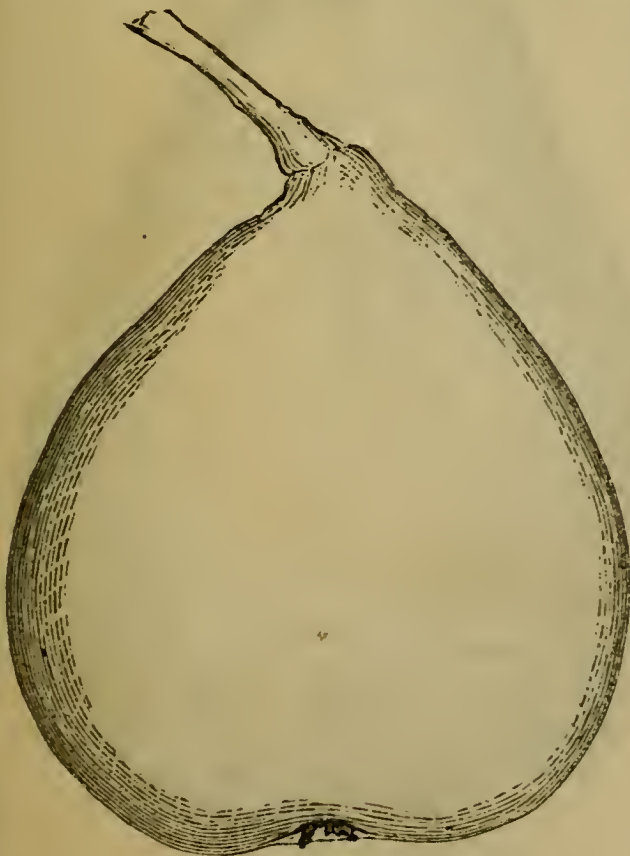


Fig. 112—LAURE DE GLYMES.

is medium in size, conical-obovate, regular, the whole surface nearly covered with a russet, which becomes a rich light orange at maturity—scarcely reddened towards the sun; stem three-fourths of an inch in length, inserted without depression in a fleshy base; calyx moderately sunk in a smooth basin; flesh yellowish-white, slightly granular, buttery, not melting, with a high and somewhat perfumed flavor—quality "very good." It is probable that the quality of this pear may vary considerably, or be found to range, under the various circumstances of cultivation, soil and season, from "good" to "best." It ripens about the middle of autumn, sometimes continuing quite late.



*Nouveau Poiteau*.—A vigorous grower, productive, forming a fine pyramid on quince. Fruit rather large, obovate pyriform, with a juicy and melting texture and fine flavor. This pear promises to be quite valuable.

*Ontario*.—We have received specimens of this fine new native variety from W. T. & E. SMITH of Geneva, N. Y. It is a vigorous and productive sort, and promises to be valuable for market. The quality is "good" or "very good"—not quite equal to the Virgalieu or Doyenne in its high aromatic flavor, but well-grown and well-ripened specimens are not much inferior. In form it considerably resembles the Bartlett, but is of smaller size, and we are informed it is a seedling of the Canandaigua; if we were to guess its origin, without any knowledge except from the specimens, we should think it was a cross from the Bartlett and Doyenne.

Fruit medium or rather large, oblong-pyriform, sometimes very faintly and obscurely ribbed, and generally somewhat irregular. Skin pale yellow, with numerous very small dots. Stalk about an inch long, mostly curved, with a fleshy ring at base, and inserted in an irregular depression. Calyx open or partly closed, in a wrinkled basin. Flesh white, buttery, becoming melting, with a rather sweet, mild, pleasant, agreeable flavor. Ripens a little before mid-autumn.

*Sheldon*.—Medium to large, roundish-obovate, very obtuse; skin pale green russet, becoming a rich brownish russet; stalk short, stout, flesh very melting and juicy, with a high, rich, peculiar, and excellent flavor. One of the most valuable of all new pears. Middle and late autumn. Origin, Wayne county, N. Y.

*Theodore Van Mons*.—Medium to large, obovate-pyriform, regular, greenish-yellow, more or less covered



Fig. 113—ONTARIO.

with distinct patches of russet; stem an inch long, scarcely sunk; calyx large, open; (basin, none)—sometimes closed in a small basin; flesh granular, juicy, and melting—sometimes slightly astringent. Varying from “good” to “very good.” This pear is likely to prove valuable on account of its vigorous growth and great productiveness, when worked on pear or quince.

*Van Assche*, or *Van Assene*.—Rather large, conic-obovate, yellow, with a fine touch of red; flesh juicy, melting, and often excellent. Tree vigorous and productive. Middle and late autumn.

*Walker*.—Fruit large, long pyriform, flesh rather coarse, rich, with a peculiar almond flavor. The last half of autumn.

*Zepherin Gregoire*.—Inferior to some as a fine grower, but marked for the high excellence of its quality. It is very productive—the growth of the tree rather slender. Its lateness,—ripening through the latter part of autumn,—increases its value. It is medium in size, roundish-obovate, light green, reddened when fully exposed to the sun; stem an inch and

a-fourth long, fleshy at insertion; calyx open, in a narrow basin; flesh buttery, very melting, fine-grained, with an excellent perfumed flavor—“best.”

**PEARS RIPENING IN SUCCESSION.**—The following list will give a continued supply, beginning to ripen in the Northern States at mid-summer, and continuing through summer, autumn and winter, into spring: Madeleine, Doyenne d'Ete, Skinless, Giffard, Bloodgood, Osband's Summer, Rostiezer, Tyson, Brandywine, Kirtland, Bartlett, Washington, Andrews, Bilboa, Belle Lucrative, Buffum, Seckel, Flemish Beauty, Stevens' Genesee, Howell, Urbaniste, Beurre Bosc, Autumn Paradise, Louise Bonne of Jersey, Beurre d'Anjou, White and Gray

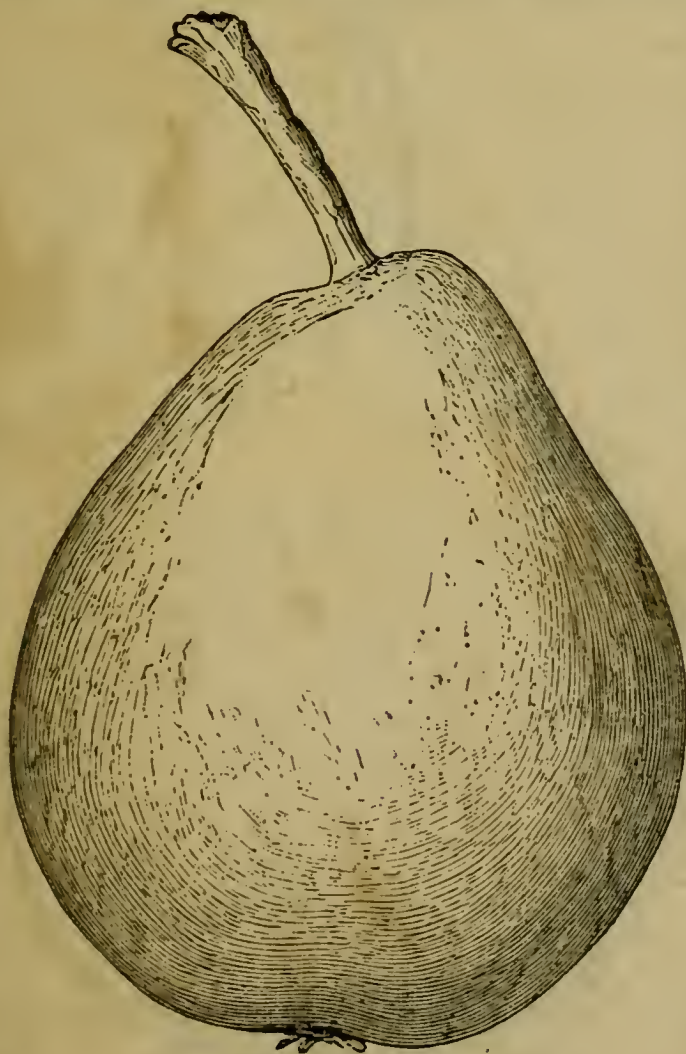


Fig. 114—THEODORE VAN MONS.



Doyenne, Sheldon, Beurre Diel, Noiveau Poiteau, Lawrence, Siculle, Winkfield, Beurre Clairgeau, Beurre Langelier, Columbia, Josephine de Malines, Winter Nelis, Prince's St. Germain, Beurre Gris d'Hiver Nouveau, Doyenne d'Alençon, Easter Beurre.

VARIETIES OF THE PEAR MOST LIABLE TO FIRE-BLIGHT.—*Madeleine, Bartlett, Passe Colmar, Stevens' Genesee, and Glout Morceau*, and *Winkfield* while young. Among those least liable, the *Seckel* stands at the head, and the following are less liable than those first named: *Louise Bonne of Jersey, Angouleme, Flemish Beauty, Sheldon, Virgalieu, Easter Beurre*. All are, however, more or less affected in different places, and sometimes the order here given is reversed.

VARIETIES WHICH DO NOT CRACK.—The cracking of some sorts is becoming a formidable evil. It becomes, therefore, desirable to select those least affected. At a large pomological meeting held at Buffalo in 1857, none had ever known the *Lawrence, Doyenne d'Hiver, Bartlett* and *Ananas d'Ete* to crack. Only one had seen the *Angouleme* and *Louise Bonne of Jersey* affected. The *Flemish Beauty* was rarely injured.

#### GATHERING, KEEPING, AND MARKETING PEARS.

—Some cultivators have been greatly disappointed in the deficient quality of their fruit; and others, who raise for market, at the low price received. This disappointment results either from the careless manner of gathering, from improper ripening, or from a bad selection of a purchaser or dealer. Nearly all varieties should be picked several days before fully matured, in order to secure the best flavor and appearance. The utmost care must be taken to avoid bruising, for indented spots will nearly destroy their sale. The *Bartlett* and some other sorts, if gathered a

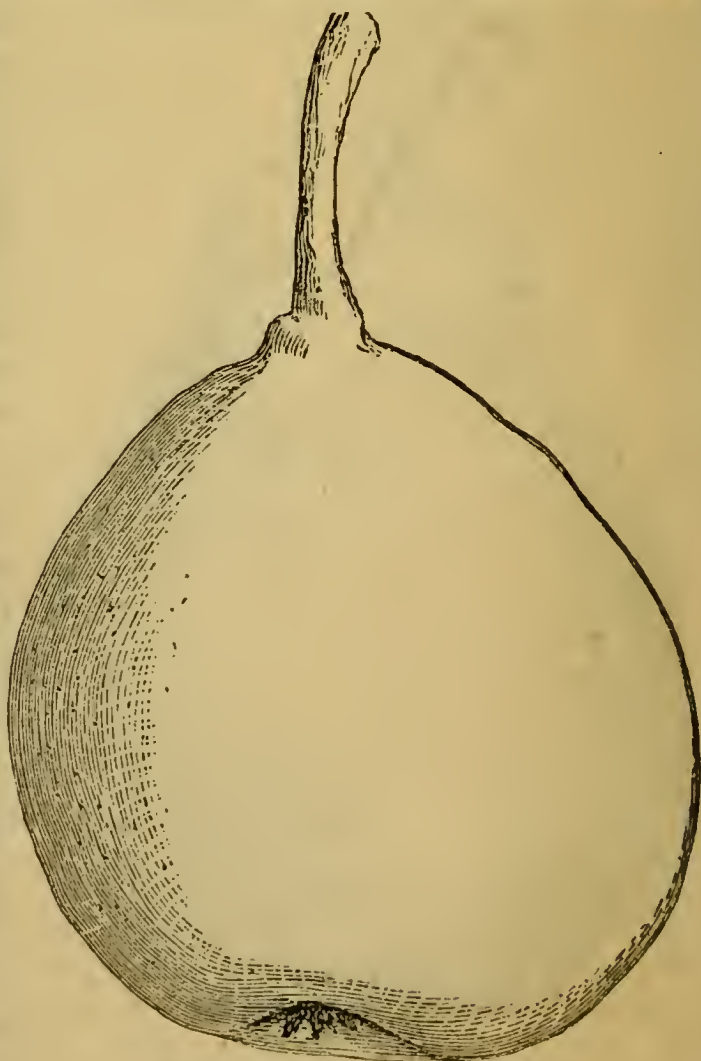


Fig. 115—ZEPHERIN GREGOIRE.

week or more before maturity and kept in a dark place, will become marked with a fine red cheek, adding much to their attractive appearance; while they would only present the common yellow skin if ripened in the light. Some varieties depend almost wholly on the best mode of ripening, for perfecting their flavor, without which they would be nearly tasteless. This has been especially the case with *winter pears*. Some of these, being kept in too warm a place before the proper period of maturity, ripen too soon, and mid-winter varieties become soft by the close of autumn. Others are withered while yet green, after which they never can become excellent. This difficulty is partly owing to imperfect development in growth in consequence of neglected cultivation. The very best treatment must be given to the trees of winter varieties. And the fruit-room must be cool, and neither too damp nor too dry. As the period of maturity approaches, they are to be placed in a warmer apartment. Great care has been taken by some cultivators to keep their pears in drawers or on shelves, in single layers; but of late years more success has resulted from packing away in tight barrels, as practiced for winter apples. They are not then subjected to the changes effected by currents of air, nor changes of humidity. The apartment must, however, be quite cool. In some instances they have been very successfully kept in the center of barrels, surrounded with apples. All bad odors should be carefully excluded; excellent fruit has sometimes been ruined by them. Wrapping them separately in paper or cotton, is found to abstract a portion of the flavor. John Gordon, a very successful pear-raiser near Boston, finds that *woolen cloth*, placed between the successive layers of the fruit, assists most perfectly in ripening. His general skill in the process of maturing, together with his excellent cultivation, enables him to sell Bartletts at ten dollars per bushel, while his neighbors, with ordinary management, received but three dollars.

Those who send fruit long distances to market, should be careful to have it packed when sufficiently hard to endure the journey before softening; to pack it tight in barrels or boxes, with coarse and elastic matting around the interior, so as completely to prevent rattling; and to consign them to a commission salesman of character and responsibility, who understands his business thoroughly, who knows when the right period of maturity has arrived, and who can dispose of them to the best advantage.

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**SELECTION OF CHERRIES.**—P. BARRY, one of the four greatest American pomologists, made the following selection of cherries, at the meeting of the Fruit Growers' Society at Rochester in 1858: *Early sorts*—Early Purple Guigne, Belle d'Orleans, Gov. Wood, Mayduke, Black Tartarian and Black Eagle. For a late sort, Reine Hortense, and very late, Belle Magnifique. For market, he would add Napoleon, Rockport Bigarreau and Elkhorn.



## P E A C H E S.

The following selection of the most highly esteemed varieties, will furnish a succession lasting about two months:—Serrate Early York, Cooledge's Favorite, Large Early York, Crawford's Early, Nivette, Oldmixon Free, Bergen's Yellow, Druid Hill, Crawford's Late, and Heath Cling. The last named, (in the Northern States,) if picked just before frost, and kept on shelves in a cool room, will remain in good eating condition for some weeks, and specimens have been kept till winter. Crawford's Early is the most reliable for uniform and good crops through different seasons, and Cooledge's Favorite has been found remarkable for its hardiness.

There are other varieties, ripening at the same time as some of the above, and nearly or quite as good in quality, which might be substituted for them. For example, the Early Tillotson is quite as early as the Serrate Early York, and in some localities, particularly in the Southern States, is higher in flavor and more valuable. George the Fourth and Grosse Mignonne ripen nearly with Large Early York. Morris White ripens at the same time as Nivette.

## P L U M S.

The following valuable or excellent old and new varieties, are carefully arranged according to their order of ripening, and they furnish a succession of fruit from the middle of summer until after the middle of autumn, or for about three months.

*Primordian*—small, yellow, flavor moderate, tree a slow and slender grower, but good bearer; valuable for its extreme earliness, ripening a little before the usual time of harvesting wheat.

*Imperial Ottoman* and *Royal Hative*, are very early plums, of medium size, and good quality.

*Peach Plum*, a very large and showy variety, of second quality.

*Hudson Gage*, a new sort, of medium size, and of a rich and fine flavor, the tree thrifty and productive.

*Prince's Yellow Gage*, remarkable for its hardiness and productiveness, the fruit above medium size, and usually juicy and with a fine flavor.

*Duane's Purple*, a very large and showy fruit, but of second-rate quality.

*Green Gage*, well known for its unequalled flavor, the tree a slow grower; *Lawrence*, a large, green, and excellent plum; and *Red Gage*, a very productive and fine medium-sized plum, all ripen about the same time. The *Lombard*, a very hardy and reliable sort, of good quality, is scarcely later.

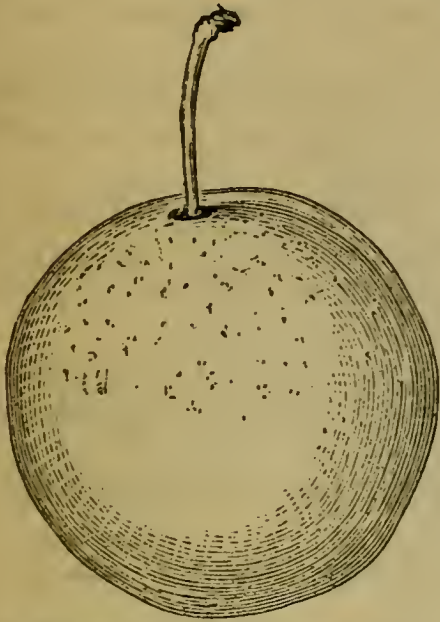


Fig. 116—IMPERIAL OTTOMAN.

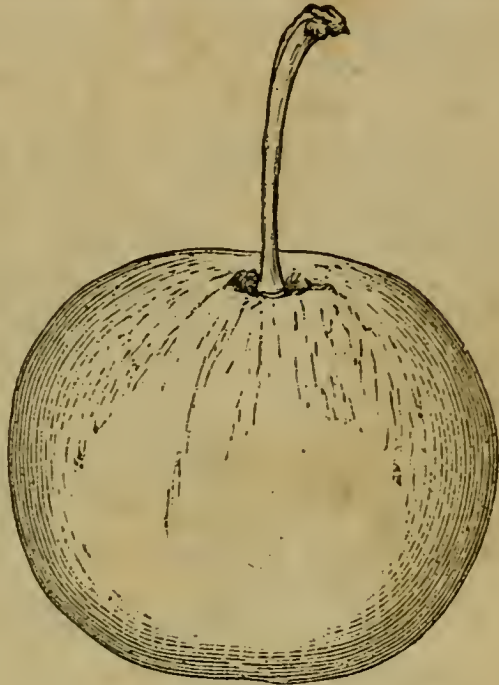


Fig. 117—McLAUGHLIN.

*Washington*, very large and showy when well-grown, is a great and general favorite, but a serious drawback on its value is liability to rot on the tree.

*Smith's Orleans* immediately follows the *Washington*. It is a large, oval, purple fruit, and the tree is

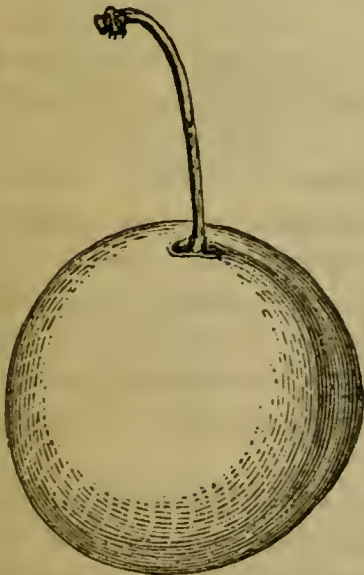


Fig. 118—SCHENECTADY CATHERINE.

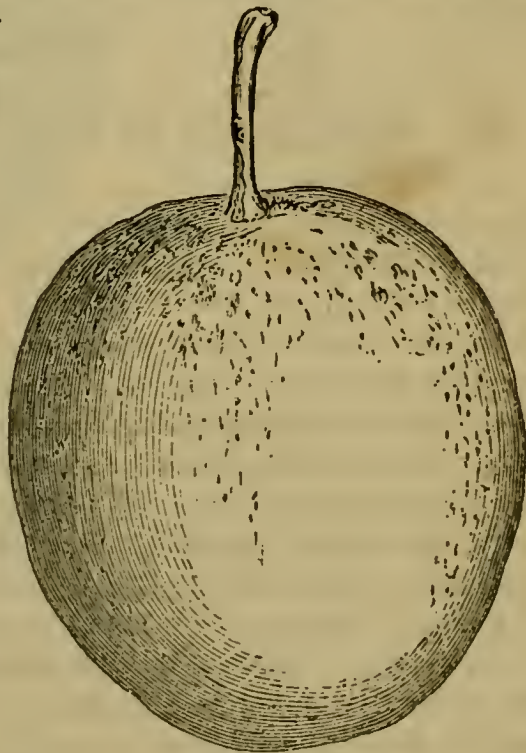


Fig. 119—FULTON.

remarkable for its productiveness, hardiness, and vigorous growth.

*Jefferson*, a large, handsome, and excellent variety, follows next in succession.

*Bleecker's Gage*, a productive and reliable plum; *Red Diaper*, large,



showy, and excellent, but a slow grower; and *Columbia*, a very large, handsome and showy, but rather coarse plum, all ripen together. Nearly at the same time is the

*McLaughlin*, one of the finest of all the new plums, the tree being vigorous and very hardy, and the fruit large, and scarcely inferior in delicious quality to the *Green Gage*.

The *Imperial Gage*—well known for its rapid growth and enormous productiveness; and the *Bingham*, a large, handsome, productive and excellent plum, ripen about the same time or immediately after the preceding several sorts.

The *Schenectady Catherine* is small in size, but is valuable for its excellent quality and profuse productiveness, but more particularly for the extreme hardiness of the tree and its endurance of severe winters.

*Reine Claude de Bayay*, one of the best new late varieties, productive, and a vigorous grower.

*Coe's Golden Drop*, a very large and excellent plum, but requiring a warm season to ripen it at the north.

*Fulton*, a new variety, large, of a rich, high flavor—the tree vigorous and productive, and the fruit hanging long after ripe.

*Coe's Late Red*, a good, late, medium-sized plum, tree thrifty and prolific.

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## THE STRAWBERRY.

TRANSPLANTING STRAWBERRIES.—The best time is always early in spring, as, at that time, we have only to set out the plants with ordinary care, for all to grow. They will bear abundantly the second season, and if kept clean and cultivated, for two or three years afterwards. If allowed to run the season of transplanting, and not cultivated except in the early part of the season, they will give a full crop the next year, but not afterwards. Some good cultivators think it best and most economical of labor to plant a new bed every year, and to let the bed run full of plants, for only one year's bearing. They find it easier to plant out a new bed in spring, than to cultivate the old one through the season. The crop is not, however, so fine, when thus treated.

Transplanted immediately after bearing, and while the plants are somewhat exhausted and consequently in a partially dormant state, strawberries will do well, and afford as good a crop next season, as by spring transplanting, but more care and labor are required. The ground is first to be prepared by properly enriching it, and making it clean and mellow. The amount of manuring must depend greatly on the previous character and condition of the soil. If naturally fertile, and if it has been well previously manured, little need be applied; if not largely composed of



Fig. 120—HOOKER STRAWBERRY.

vegetable matter, a quantity of leaf-mould or well-prepared peat will be found very useful. Where much manure is needed, a compost with a large proportion of such vegetable matter is always best.

The plants should be selected from the youngest well-rooted runners of the previous year. They should be lifted out with a spade and the earth shaken off, and not *pulled out*, as is often done to the injury of the roots. All the fully expanded leaves are to be clipped off, leaving only the small, half-open ones. The roots are then to be dipped in mud made in a pan or pail for this purpose, thick enough to leave a coating on them about the fourth of an inch. They are then to be transplanted, spreading out the fibres as much as may be convenient, and taking care not to cover the crown. If the soil be dry, they should all be watered heavily, and an inch of mellow earth drawn over the watered surface, to fill up the settled earth. A mulching is then to be applied about an inch or an inch and a-half thick, of fine, partly-decayed stable manure. This will prevent





Fig. 121—WILSON'S ALBANY STRAWBERRY.

the surface from drying and becoming hard and crusted ; and if watering should afterwards be necessary, which, however, can only happen in extremely dry weather, this mulch will keep the surface moist and in proper condition. Treated in this manner, all or nearly all the plants will live, and furnish an abundant crop next year.

### THREE NEW STAMINATE STRAWBERRIES.

The opinion of some eminent strawberry cultivators, that pistillate varieties only can be relied on for uniform productiveness, is now fully disproved. Two new profuse-bearing staminate sorts of great size, have been produced within a few years, that are likely to supersede all preceding ones. These are the *Wilson*, which is perhaps the most prolific of all known strawberries, and the *Hooker*, superior in quality, but less

hardy than the Wilson. They have been already briefly described by Charles Downing and some other writers.

The size given in the accompanying engravings, is the result of exact measurement of the fruit as grown in Western New-York, with ordinary cultivation. Unusual care would doubtless afford larger berries.

The HOOKER strawberry varies in size when fully grown, from an inch to an inch and a-third, and sometimes an inch and a-half in diameter; it is roundish and obtuse-conical, the berries remarkably well filled out in every part, very dark crimson, flesh soft and juicy, with a sweet and excellent flavor. Staminate (or hermaphrodite) and uniformly a great bearer. The writer has picked berries an inch and a-third in diameter, from plants set out seven weeks previously. It has two drawbacks—its softness,—unfitting it for distant marketing,—and its tenderness, resulting from the protrusion of the crowns of the young plants above the surface of the earth, but which rarely causes their destruction. It is destined to supersede wholly Burr's New Pine and other sorts, hitherto so largely raised for family use. Origin, Rochester, N. Y.

WILSON'S ALBANY is not less in size than the Hooker; it is extremely hardy, the plants early in spring presenting a remarkably deep, healthy green; and is unequalled for its crops, in the several places hitherto tried, both in the State of New-York and further west. Two or three hundred bushels of fruit might unquestionably be raised on a well-cultivated acre. The berries are roundish-conical, sometimes roundish-oblate, and occasionally coxcombed, full and obtuse, dark crimson, moderately firm, but becoming tender when fully ripe, flavor very good, but not of the highest excellence. Probably the most profitable market sort at present known. Crops, that for other sorts would be considered good, have been produced seven weeks from the time of setting out in spring. Origin, Albany, N. Y.

Both of these varieties being staminate, are self-fertilizers, and save much of the trouble usually resulting from the necessity of mixing staminate with pistillate sorts, such for example, as Burr's New Pine, Hovey's Seedling, Hudson, Crimson Cone, McAvoy's Superior, &c.

PEABODY'S STRAWBERRY.—As far as size and flavor are concerned,



122—PEABODY STRAWBERRY (as grown in western N. Y.) this renowned new sort



is not a humbug, as many have feared. The figures are the exact size of specimens grown with ordinary care, and we think the quality unexcelled by any other sort. It is oblong-conical, often coxcombed, deep crimson, flesh firm, very sweet and high-flavored, and appears to keep longer after picking than other varieties. The plants have proved quite hardy at the north, but we fear it will be found too unproductive to be of much value. Origin, Columbus, Georgia. It is sometimes termed "Peabody's Hautbois," from the faint shade of the Hautbois flavor which the berry possesses; but it does not in the least resemble the Hautbois in any other particular.

In addition to the preceding, the following new sorts may prove valuable:—*Jenny Lind*, for its extreme earliness; *Genesee*, for its good size and fine appearance; *Triomphe de Gand*, very large and showy, but a moderate bearer. Scott's Seedling is large, showy, and productive, but is deficient in flavor—the same remark applies to the Cushing.

At the summer meeting of the Fruit Growers' Society of Western New-York, in 1858, twelve strawberry-growers voted for the five best, with the following result:

FOR AMATEURS—Hooker, 12 votes—Large Early Scarlet and Burr's New Pine, 7 each—Hovey's Seedling, 5—Wilson's Albany, 4—Jenny Lind, McAvoy's Superior, Triomphe de Gand, Peabody, and Trollop's Victoria, 2 each.

FOR MARKET—Large Early Scarlet, 8 votes—Crimson Cone and Wilson's Albany, 7 each—Genesee, 5—Hovey's Seedling and Hooker's, 4 each—Cushing, Scott's Seedling, Longworth's Prolific, Iowa, and Burr's New Pine, 2 each.

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## HARDY FRUITS AT THE WEST.

The late intensely severe winters in the western States, have performed a very useful and important service. By cutting off all tender varieties of fruits, they have furnished a list of the most hardy, such as may be relied on for endurance in future years, and they have performed this task at the very commencement of extensive plantings, when the knowledge thus given is especially needed.

Single experiments do not establish a rule; as a variation in exposure, in fertility of soil, in the thriftiness of growth, and especially in drainage, may all give quite different results with the same sort. But a variety that is frequently killed, cannot be regarded as reliable; and one which under all circumstances escapes unhurt, may from its entire hardiness, be extensively planted.

The following lists were recently furnished by intelligent western correspondents, from which a general summary of results is made, and

which cannot fail to be valuable to all those who are about to set out orchards in the west.

## APPLES.

I. C. ALLEN of Lena, Ill., furnishes the following results of his experience. *Very hardy*—Oldenburgh, Late Strawberry. *Hardy*—Early Joe, Early Pennock, Sops of Wine, Cooper, Fulton, Fall Orange, Mother, Fallawater, Hubbardston Nonesuch, Jonathan, Limbertwig. *Tender*—Early Harvest, Summer Bellflower, Belmont, Hawley, Jersey Sweeting, Rambo, Twenty Ounce, Baldwin, Domine, English Russet, King, Newtown Pippin, Golden Sweet.

E. ORDWAY of Freeport, Ill., gives the following list of such varieties as have withstood the late severe winters there: Tallman Sweeting, Yellow Bellflower, Seeknofurther, Golden Russet, Northern Spy, White Winter Pearmain, Winesap, Fallawater, Maiden's Blush, Red Canada, Sops of Wine, and Large and Small Romanite.

SAMUEL EDWARDS, La Moille, Ill., gives the following as the most hardy and valuable:—Red June, High-Top Sweeting, Hocking, Early Pennock, Keswick Codlin, Maiden's Blush, Fameuse, Westfield Seeknofurther, Yellow Bellflower, White Winter Pearmain, Fulton, Red Romanite.

Dr. S. L. PENNINGTON, Sterling, Ill. *Hardy*, or but slightly injured—Yellow Bellflower, Westfield Seeknofurther, Fameuse, Black Detroit, Winesap, Pomme Grise, Lowell, Red June, Willow Twig, Early Nonpareil. *Tender*—Baldwin, Porter, Rhode-Island Greening, Roxbury Russet, Ortleigh, Sweet Bough, Rambo.

E. H. SKINNER, McHenry Co., Ill. For *summer*—Red Astrachan and Carolina Red June. For *autumn*—Porter. *Early winter*—Fameuse. *Winter and spring*—Jonathan, Rawles' Janet, English Russet.

J. S. SHERMAN, Rockford, Ill. Sweet June, Baldwin, Tompkins County King, Wagener, and most of the hardiest in Western New-York, except Rhode-Island Greening and Sweet Bough. Maiden's Blush and Yellow Bellflower succeed admirably.

B. W. STEERE of Adrian, Mich., mentions as particularly *tender*, English and Roxbury Russets, Gravenstein, Baldwin, and Rhode-Island Greening—the latter becomes hardier with age, but is an uncertain bearer.

AMASA STEWART of Le Seur, Minnesota. Early Harvest, Early Strawberry, Red Astrachan, Maiden's Blush, Fameuse, Harrison, White Bellflower. The Rambo was tender.

F. K. PHENIX, Bloomington, Ill., who has also made extensive observations in Wisconsin, names the following hardy apples: *Summer*—Carolina June, Sweet June, Red Astrachan, Sops of Wine,

Benoni, Summer Pearmain. *Autumn*—Autumn Strawberry, Dyer, Fall Orange, Haskell Sweet, Gabriel, Northern Sweet, Oldenburgh, St. Lawrence. *Winter*—Yellow Bellflower, Carthouse, Limbertwig, Romanstem, White Winter Pearmain, Seeknofurther, Tallman Sweet, Winesap, Monstrous Pippin, English Golden Russet, Willow Twig, Winter Sweet Paradise, Campfield Sweet.

OHIO POMOLOGICAL SOCIETY, 1857, from the report of various members: Carolina Red June, fine in central Indiana, poor in southern Michigan; Late Strawberry, good in Ohio, Indiana and Illinois; American Summer Pearmain, generally and highly esteemed; Hawley, promising well; Maiden's Blush, everywhere hardy and productive; Fallawater, second quality, but everywhere valuable; White Pippin, one of the best for central and southern Ohio; White Winter Pearmain, highly prized in Indiana and Illinois, unknown in Ohio; Pryor's Red and Rome Beauty, southern Ohio; Red Canada, northern Ohio. The following sorts have generally done well: Winter Sweet Paradise, Broadwell, Tallman Sweet, Danvers Sweet. The Northern Spy had done well in Kentucky, St. Louis, and Indiana, although diminished in keeping qualities.

In addition to the preceding lists, the following has been furnished by M. R. PATRICK of Sackett's Harbor, N. Y., a place remarkable for its intense winters and severe winds. *Vigorous growers and perfectly hardy*—Hawthornden, Sops of Wine, Late Strawberry, Jewett's Red, Orne's Early. *Nearly as hardy*—Early Harvest, Summer Queen, Fall Orange, Hawley, King (Tompkins,) American Golden Russet, Swaar, Benoni, Red Astrachan, Ribston Pippin. *Somewhat tender*—Rambo, Dyer, Gravenstein, Fameuse. *Half hardy*—Jonathan, Domine, Sweet Baldwin, Danvers Sweet, Belmont, Canada Reinette, Yellow Bellflower. *Tender*—Baldwin, Twenty Ounce, Tallman Sweet, Fall Pippin, Sweet Bough, Summer Rose, Early Strawberry, Early Joe, Jersey Sweet, Oldenburgh, Roxbury Russet, (very poor,) Westfield Seeknofurther, Ladies' Sweet, Esopus Spitzenburgh, Porter, Lowell, Lady Apple, Newtown Pippin, English Russet, Northern Spy, Red Canada, Rhode-Island Greening, Peck's Pleasant.

From the preceding lists, it will be seen that the following have proved hardy wherever tried, without exception, viz: *Sops of Wine, Late Strawberry, White Winter Pearmain, Winesap, Fall Orange, Fallawater, Maiden's Blush, Carolina June, and Red Astrachan.* These sorts



may therefore be planted without fear of cold winters. The vote was *nearly* unanimous for *Fameuse*, *Yellow Bellflower*, *Westfield Seekno* further, *Jonathan*, and *Oldenburgh*.

#### PEARS.

B. W. STEERE, Adrian, Mich., gives the following list: *Tender*—Bartlett, Seckel, Winkfield, Oswego Beurre; *hardy*—Flemish Beauty, Tyson, Rostiezer, Doyenne d'Été, Beurre d'Anjou, Belle Lucrative, Onondaga, and Lawrence.

The *Ohio Pomological Society*, in its Transactions for 1857, gives from the report of some of its members, the following pears as having proved valuable at Cincinnati: Walker, Fontenay Jalonsie, Andrews, Gray Doyenne, Urbaniste, Belle Lucrative, Flemish Beauty, Kirtland, Doyenne Sieulle.

I. C. ALLEN of Lena, Stephenson Co., Ill., furnishes the following list of pears, the results of his experience in that region. *Very hardy*—Flemish Beauty. *Har-*

*dy*—Buffum, Columbia, Dix, Winter Nellis, Forelle, Fulton, Lawrence, Osband's Summer, Oswego Beurre, Onondaga, Stevens' Genesee, Susette de Bavay. *Half-hardy*—Doyenné d'Été, White Doyenné, Easter Benrré, Glout Moreeau, Bilboa, Henry IV, Seckel, Tyson, Bergamotte Cadette, Arcmberg. *Tender*—Bartlett, Belle Lucrative, Beurre d'Anjou, Beurre Bose, Catillac, Chaumontelle, Dearborn's Seedling, Angouleme, Louise Bonne of Jersey, Madeleine, Vicar of Winkfield, Van Mons' Leon le Clerc.

#### CHERRIES.

The dukes and morello cherries, such as Early Richmond, Mayduke, Belle Magnifique, Belle de Choisy, Morello, &c., all succeed well at the west; while the Heart & Bigarreau varieties generally fail.

#### SMALL FRUITS.

Currants, Houghton's Gooseberry, and the smaller fruits generally, succeed well throughout the west.

## RENOVATING OLD TREES.

When old trees become feeble, there is no better way of imparting to them vigor, than by *manuring*. Instead of adopting the more common practice of digging a circular trench around them and filling this with manure, the operation may be performed in a more perfect and efficient manner by digging narrow radiating trenches from within a few feet of the trunk, directly from it—this will prevent cutting many of the roots. The annexed diagram (fig. 123) will show the position of these trenches. These may then be filled with a *compost*, made of turf, stable manure, ashes, and perhaps a little bone manure—the turf to be the chief constituent, say one-half or two-thirds—and the ashes say one-thirtieth. The bone manure is not essential, as its constituent parts are in common manure in small quantities. If this is done in autumn, the roots will be prepared to penetrate it early in spring, and if the tree is not past recovery, it may make a new push. The roots probably extend as far each way as the height of the tree, and the trenches should extend about as far. They need not be cut very near the tree, as the roots are all large there, and would be more likely to be injured and would be little benefitted. The trenches should be only the width of a spade, and may be two to four feet apart.



Fig. 123.

## PRESERVING FRESH FRUITS.

## THE YEOMANS FRUIT BOTTLE.

In answer to the frequent inquiries that are made for the best mode of preserving fresh fruits in cans, jars or bottles, the following directions have been furnished by T. G. YEOMANS of Walworth, N. Y., who, besides being a very skillful and successful cultivator of fruits and fruit trees, has for several years given special attention to the subject. Having used his bottles, we find them exceedingly convenient and just the thing wanted. He states in a recent letter, (and his statements can be fully relied on,) that in the sale of many thousands of dozens of these bottles, so far as he knows, "they have given universal satisfaction." The following is his statement of the advantages of this fruit bottle :

1st. It is made of glass, and will not corrode and poison the fruit; and being transparent, the condition of the fruit can at all times be seen, while they are so easily cleansed, that they are as good as new for succeeding years.

2d. It is more readily sealed up securely, than any other can, jar or bottle.

3d. The shape of the neck is such that the cork cannot be forced in by the atmospheric pressure on it, caused by the cooling and consequent contraction of the fruit in the bottle; and also with a neck of such length that the contraction will not bring the fruit below the neck, so that if there should be, as there

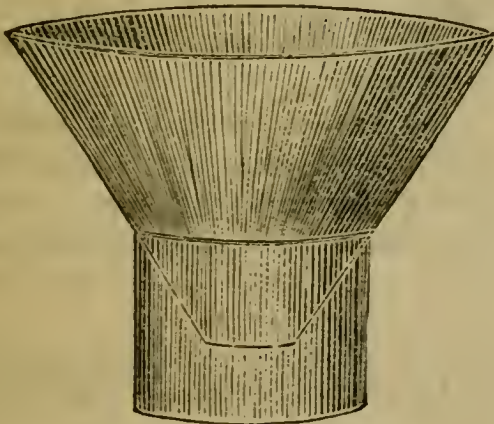


Fig. 124—TUNNEL.

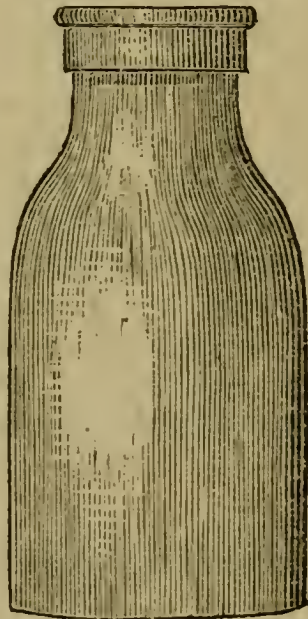


Fig. 125—FRUIT BOTTLE.

sometimes will be, a slight mold on the surface, the surface being so small, very little fruit would be thus injured, and that little could be very easily removed; while the shape of the bottle below the neck is of such a taper, that the fruit comes out readily.

4th. It is cheaper than any other bottle, jar or can of merit, that has



yet been brought before the public, and *so cheap* as to be within the reach of all.

**DIRECTIONS FOR USING AND FILLING.**—Cook or stew the fruit in its own juice, with water enough only to keep from burning it, with sugar enough only to flavor it to the taste—or omitting the sugar entirely till opened for use, as you please—until it is cooked through in every part, keeping it well covered while cooking; then with a small dipper or large spoon, and a tunnel for the purpose, fill the bottle, which should be standing in a pan of warm or hot water, to prevent its breaking; when full, immediately cork by pressing the cork down to the jog in the neck, then with an iron spoon, or any thing else, rub a little wax over the surface of the cork, and soon after dip the top of the bottle into the hot wax, which completes the sealing. The twine that goes under the cork should be bent down on the cork, and sealed under, to prevent, by any possibility, air from passing down by the twine. Keep in a cool, dry place.

Such fruit as is naturally too dry to afford juice enough to cover it when cooked, or such as are too hard and firm to sweeten conveniently without cooking in the sugar, are best put up with sugar enough to flavor them, which at the same time furnishes juice or syrup to cover the fruit in the bottle—which, when fully covered, is less liable to mold on the surface.

To avoid mold entirely, the bottle may be inverted occasionally, and most frequently for a few weeks after putting up.

**WAX FOR SEALING.**—An excellent sealing-wax is cheaply made of about one pound rosin to an ounce of tallow, to give it toughness.

**CORKS, &c.**—Corks to fit, (furnished, when ordered, at \$1.50 per gross,) are used by putting a small, stout twine, double, across the mouth of the bottle when corking—by these the cork may be easily extracted without injury, and kept for future use.

The bottles are of two sizes, holding about one and two quarts, and are put up in boxes of twelve dozen for the one-quart bottles, and six dozen for the two-quart, and sent safely to any distance. Wholesale prices are furnished by the inventor, T. G. Yeomans, Walworth, Wayne Co., N. Y.

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## KEEPING GRAPES THROUGH WINTER.

It is important that they be kept in a *cool* place; a slight frost will not injure them if they have become *fully ripe*. Bunches with green stems are not ripe, and may be spoiled by freezing. Cut the stems in picking, handling the bunches as little as possible, and remove every imperfect or decayed berry. Place them in broad shallow boxes about six inches deep, with a white sheet of unsized paper on the bottom and between each layer of grapes. Set the boxes uncovered in a dry open place for about ten days,

till all the surplus moisture has evaporated—this will prevent future molding and decay, and is very important. Then cover the boxes with covers which have been previously made to shut tight. Place them in a cool cellar, or in a garret not subject to severe frost, and they will keep till spring as fresh as when packed away.

A convenient size for the boxes is two feet square, and six inches deep. These are rather better than tubs made from barrels cut in two, by allowing the moisture more readily to escape. Baskets for packing should be avoided, as by yielding, they bruise the fruit. A convenient way for gathering is to suspend a light shallow box, holding about a half bushel or less, by means of a strap to the neck, leaving both hands at liberty. In this box they may be carried to the place of packing.

To send grapes long distances, pack them closely, without any intervening substance, in pasteboard boxes, so as not to shake or rattle. The boxes should hold about half a peck each. In this way they may be carried safely a thousand miles.

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## RAISING AND KEEPING CELERY.

P. HENDERSON of Jersey City, who raises celery largely for market, adopts the following mode, dispensing with a hot-bed. The seed is thinly sowed early in spring, on a very rich, mellow, and perfect piece of land—they are well cultivated and thinned, and afford fine healthy plants by the first of 7 mo. (July.) They are always transplanted in rain, to rich land. Those intended for autumn use (blanching on the ground,) are in rows four feet apart (to allow banking up,) and five or six inches in the row—on the surface and not in trenches. For winter and spring use, the rows are three feet apart. They are well cultivated with a horse and by hoeing.

When about half grown, or about the end of summer, a little earth is drawn to them to give them an upright position. After that, the plants are held closely together with one hand, and additional earth applied. In a few weeks more, they are banked up by digging the earth between the rows.

That intended for winter use, is packed away in trenches about a month before winter sets in. For early winter, the plants are removed a week or two sooner, and without shaking the earth from the roots. For later use, they are taken up a little later, and packed more closely. The trenches are not over eight or ten inches wide—if wider they promote fermentation and decay. After they are filled, the soil is pressed closely on each side, by thrusting a spade down, but leaving the green tops exposed. About the first of winter, the whole is covered with about six inches (or more) of stable manure or leaves.



## APPLE-SEED WASHER.

Nurserymen and others often inquire for the best mode of washing apple-seed from the pomace. The following, adopted by J. M. MATTISON, is one of the best, by which two men will wash half a bushel of seed or more in an hour:

Make a box 5 feet wide, 8 or 9 feet long, and 10 inches deep; leave the lower end *f*, one inch lower than the sides, for the water to flow over. Place this box in the bed of a brook or stream, on crossbars or scantling, with a dam above to collect the water into a trough, carrying the water into the box, and projecting six inches over it. This trough should be made of boards 12 inches wide, nailed together, and the stream should be large enough to nearly fill it when flowing gently. To

the quantity of water pouring into the box may be easily controlled.

One man stands on the board *e* which extends across the box; and the other carries and deposits the pomace (well pounded to pieces,) into the box at *d*, one or two bushels at a time. The man on the box then stirs the pomace rapidly with a four-tined fork, and throws out the straws. The pomace floats over the lower end (which is an inch lower than the sides) and the seeds fall to the bottom. A few back strokes from the lower end of the box assist in the separation of the remaining pomace. In washing a "cheese" that contains a bushel of seed, it is usual to wash it two or three times, by using a scoop-shovel. Afterwards, the last cleaning process is given to it by placing the whole in a box, and then scratching a four-tined fork through it a few times. A little experience will enable any one to

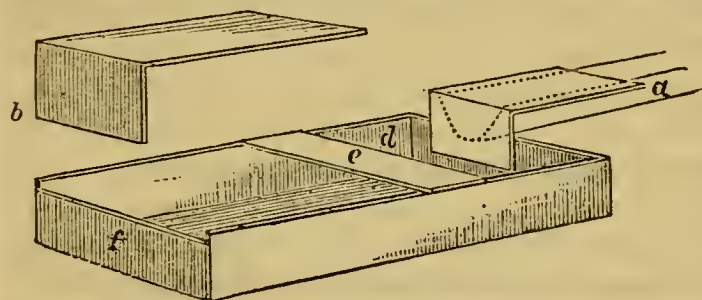


Fig. 126—APPLE-SEED WASHER.

prevent the water from dashing into the box too furiously, two boards are first nailed together as shown at *b*, one board being 18 inches by two feet, and the other 18 inches by 1 foot. The longer board is placed on the top of the spout, and the shorter at right angles across the lower end of the spout. This serves to throw the water perpendicularly downwards into the box, and at the same time serves to spread it out into a thin sheet. By moving this board up or down the spout,

judge accurately of the proper quantity of water to turn on, so as to make rapid work, and not carry the seed over the box.

The pomace, *fresh* from the cheese, should be drawn and placed on a board-platform beside the box, and then plenty of water thrown upon it, until it is thoroughly soaked. This will render it easily beaten to pieces with a hoe. The pomace should never remain in the cheese over twenty-four hours, as it soon ferments and the seed is spoiled.

**PROTECTING YOUNG FRUITS.**—Hardy as well as tender strawberries should be covered for winter, because if hardy they will make an earlier start, and ripen their crops sooner; and if tender will often escape destruction. Coarse litter is good, but evergreen boughs are better. Trim-mings of nursery trees spread over the bed and covered with straw, make a good protection and give the plants more air. The cultivated raspber-ries and blackberries need protection, where the largest and earliest crops are desired. The latter may be most readily covered with two inches of earth, first bending and pegging them down; and to prevent breaking, making a small mound of earth against the foot of the stems, of which only five or six of the best should be left in each stool.

## NURSERIES

## OF THE UNITED STATES AND CANADA.

No part of the following is copied from other lists of nurserymen previously published, but it is wholly made up from an extensive correspondence. In most cases the information it contains was derived from the proprietors themselves. Their statements, when examined, have in nearly all instances been found correct, and the list is therefore believed to be unusually accurate. There may be a few good nurseries contained in other lists, which are omitted in this; but there are also a great number excluded which are insignificant and unworthy of notice, have ceased to exist, or never had an existence except on paper.

The number of acres indicates, nearly, the extent of operations. There are a few exceptions to this rule, some nurseries near large cities occupying but little land, but containing extensive ranges of green-houses, and doing a large business. A few others occupy much land with scattered specimens, and thus overstate their operations. The extent is in all cases intended to indicate the land actually under growing trees.

A good and well-managed nursery of hardy trees requires, on an average, one laborer for every two or three acres; the sales will average \$250 per acre annually; and, on account of the necessary lapse of several years before cash returns are made, the nett profits should not be less than 40 per cent., (which is less on the capital invested than 5 per cent. for the tradesman who makes semi-annual sales.) By applying these numbers, the reader may readily determine very nearly the annual sales, cost, and profits of any good nursery, its extent being given. Thus, for example, a nursery of 100 acres managed in the best manner, requires from 30 to 50 hands, sells yearly \$25,000 worth of trees, and clears \$10,000 in money. There are a few that have occasionally exceeded these amounts; but many more have fallen below; while a great multitude, and especially those who enter the business with but little knowledge and experience, fail entirely.

There are some nurserymen who understand the business very superficially, and some are entirely unworthy of confidence. To point out such, and to name those also who are strictly reliable, and perfect masters of their occupation, would render the list more valuable, but it would be impossible in the present state of information.

[The dates give the time the nursery was commenced, and the post office address follows the name.]

## MAINE.

John W. Adams, Portland, (2 miles from, at Westbrook R. R. Station)—1849—8 acres—a large dealer in native evergreens.

S. L. Goodale, Saco.

H. Little & Co., Bangor.

## NEW-HAMPSHIRE.

Levi Burt, Walpole.

B. F. Cutter, Pelham, 4 miles from Lowell—4 acres, mostly forest and shade trees.

Joseph Pinneo, Hanover.

## VERMONT.

R. T. Robinson, Ferrisburgh.



## MASSACHUSETTS.

- Anthony & McAfee, New-Bedford.  
 Barnes & Washburn, Harrison Square, Dorchester.  
 B. K. Bliss, Springfield—chiefly greenhouse and ornamentals.  
 A. Bowdich, Roxbury.  
 Breck & Son, Brighton.  
 James Brewer, Springfield.  
 D. C. Brewer, Springfield—30 acres.  
 E. W. Bull, Concord.  
 W. C. Capron & Son, Uxbridge—4 acres—an old establishment.  
 Asa Clement, Lowell (3½ miles from)—1848—10 acres.  
 S. H. Colton, Worcester—1839—12 acres, fruit and ornamental.  
 H. H. Crapo, New-Bedford.  
 Francis Dana, Roxbury.  
 L. Eddy, Taunton.  
 Evers & Co., Boston.  
 Isaac Fay, Cambridge.  
 Ebenezer Gray, Bridgewater.  
 O. B. Hadwen, Worcester—2 acres—buys most of his trees.  
 John A. Hall, Raynham.  
 Hovey & Co., Boston—nurseries at Cambridge—extensive and widely celebrated—large and fine ranges of green and hot-houses—and very extensive orchards of specimen trees, especially of the pear.  
 S. & G. Hyde, Newton.  
 J. F. C. Hyde, Newton Center.  
 John A. Kenrick, Newton—old and extensive.  
 D. W. Lincoln, Worcester—4 acres—buys most of his trees.  
 Robert Manning, Salem, "Pomological Garden"—established in 1823 by the elder Robert Manning, who soon made the best collection of specimen trees then in America—8 acres, and 3 acres specimen trees closely planted—widely known for its accuracy and the pomological skill of its proprietor.  
 Cheever Newhall, Dorchester.  
 Dexter Snow, Chicopee—a very extensive and successful cultivator of the Verbena.  
 J. C. Stone, Shrewsbury—6 acres.  
 W. C. Strong, Nonantum Hill, Brighton, 5 miles from Boston—50 acres closely planted with a general assortment of fruit and ornamental trees, and greenhouse plants. Special attention is given to the new grapes.  
 Henry Vandine, Cambridgeport.  
 Samuel Walker, Roxbury—1834—17 acres—pears predominate, which are raised with great success—one of the most reliable nurseries in the Union.  
 B. M. Watson, Plymouth.  
 Marshall P. Wilder, Dorchester—celebrated for its collection of pears, the specimen orchards of which are probably unequalled in America.  
 Geo. W. Wilson, Malden.

## RHODE-ISLAND.

- C. & D. P. Dyer & Co., Providence.  
 Silas Moore, Providence—1841—18 acres.  
 CONNECTICUT.  
 T. C. Austin, Suffield—1838—10 acres.  
 P. & H. A. Dyer, Brooklyn.  
 Stephen Hoyt & Sons, New-Canaan.  
 S. Lyman, Manchester.  
 J. Mason & Co., (formerly C. S. Mason & Co.) Hartford—1853—3 acres, mostly small fruits, ornamentals, and greenhouse plants.  
 H. S. Ramsdell, West Thompson, Ct.—1836—5 acres.  
 Geo. Seymour & Co., South Norwalk—small fruits and New-Rochelle Blackberry.  
 Wm. H. Starr, East New-London—H. E. Chitty manager.  
 Paphro Steele & Son, Hartford (3 miles from.)  
 F. Trowbridge, New-Haven—does not raise trees, but an extensive and permanent dealer for 12 years.  
 Alfred Whiting, Hartford (3 miles from)—10 acres.  
 E. A. Whiting, Hartford (5 miles west from)—10 acres closely planted—commenced about 20 years ago with one acre, at which time the question was often asked, "Where will you find a market for all your trees?"—this, and two acres adjoining, being the largest in the State.  
 Henry Willis, West Meriden.  
 NEW-YORK.  
 S. H. Ainsworth, West Bloomfield, Ontario Co.—1848—26 acres—land thoroughly cultivated, costs about \$3000 cash per year, and sales more than double this sum.  
 Silas Boardman, Brighton, 3 miles east of Rochester—1828—fruit trees generally.  
 J. W. Bailey, Plattsburgh.  
 J. Battey, (agent for owners,) Keeseville, Clinton Co.—12 acres.  
 C. P. Bissell & Salter, Rochester (nursery on E. Avenue)—1855—mostly small fruits.  
 H. H. & J. H. Bostwick, Auburn—1848.  
 Anson Braman, Ithaca—1848—12 acres.  
 D. Brinckerhoff, Fishkill Landing, Dutchess Co.  
 Bronson & Merrill, Geneva—1854—40 acres, mostly fruit trees.  
 Wm. Brocksbank, Hudson—1836—15 acres.  
 Joseph Caldwell (manager for owner)—Troy, (on Mt. Ida, east of city,) 7 acres.  
 S. P. Carpenter, New-Rochelle—1850—mostly small fruits.  
 Henry Collins, Auburn (2 miles south of)—15 acres—one-half fruit trees, and the rest ornamentals, the latter mostly evergreens.  
 William Collins, Smyrna, Chenango Co.—small.



Fig. 127—Ellwanger & Barry's principal Packing Shed, during the Selling Season.

J. R. Comstock, Hart's Village, Dutchess Co.—7 acres—hardy fruits generally.

J. D. Conklin, Locke, Cayuga Co.—small.

John H. Corning, (formerly H. Snyder,) Kinderhook—P. O. address, Valatie, Columbia Co.—1838—25 acres—pear trees of successful growth a speciality.

Alvah Covey, Penfield, Monroe Co.—1845—30 acres.

Cowles & Warren, Syracuse.

John Dingwall, Albany—green-house and ornamentals.

J. Donnellan & Co., Hanford's Landing.

C. Dubois, Fishkill Landing.

Ellwanger & Barry, Rochester (1½ miles south of)—1838—440 acres—probably the most extensive nursery in the world. The wide celebrity of this great establishment, its extent of business, and the interest generally felt to know its operations, require a notice of corresponding fullness.

The FRUIT DEPARTMENT occupies 350 acres, in about the following proportion of the different kinds:—Standard pears, 69 acres—Dwarf do., 51 acres—Standard

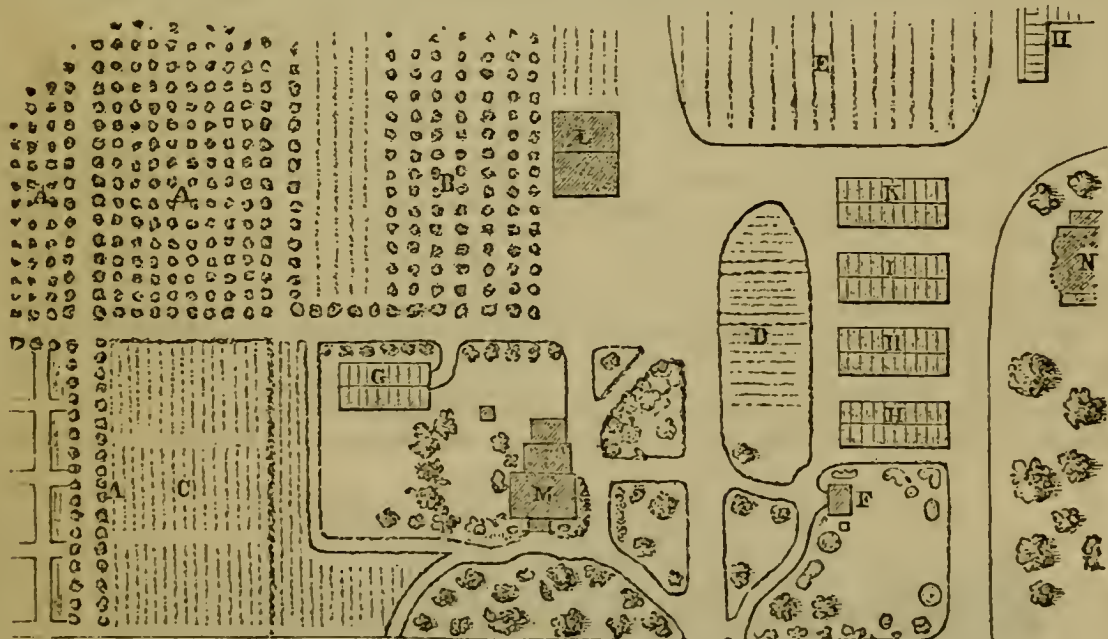


Fig. 128—Home Grounds of Ellwanger & Barry's Nursery (about one-thirtieth part of their Home Nursery)—fronting Mt. Hope Avenue.

A. part of Dwarf Pear specimen grounds—B. Part of Dwarf Cherry specimen Trees—C. Rare Evergreens, &c.—D. Herbaceous Perennials—E. Dahlias—F. Business Office—G. Cold Grapery—H. H. H. Green and Hot Houses—I. House for Propagating Grapes—K. Propagating House—L. Sheds and Working Cellars—M. Residence of G. Ellwanger—N. Residence of P. Barry.





Fig. 129—*Back View of Home Nursery of Ellwanger & Barry.*

Residence of P. Barry on the left—Business Office in the center—Packing-Houses, and Residence of G. Ellwanger on the right.

apples, 72 acres—Dwarf do., 31 acres—Standard and Dwarf cherries, 25 acres—Standard and Dwarf plums, 20 acres—and 82 acres of other fruit trees, seedling stocks, &c.

In the above-named department, the following items are more particularly worthy of notice. A fine 8-acre block of dwarf and standard cherries, containing 120,000 trees, two years from the bud; 12 acres of standard and dwarf pears in about equal quantities, two years from the bud, containing 130,000 trees of beautiful growth; another block of 20,000 plum trees from last spring's grafts, on 3 acres; 6 acres of currants, chiefly White Grape, Cherry, and Victoria, 200,000 plants; 4 acres of Houghton's Gooseberry, 70,000; 3 acres of New-Rochelle and Dorchester blackberries, 100,000 plants; and 100,000 hardy grapes on 3 acres.

The ORNAMENTAL DEPARTMENT occupies 90 acres, about as follows:—24 acres of evergreen trees, 50 acres hardy deciduous trees and shrubs, 8 acres roses, 3 acres dahlias, bulbs, and herbaceous plants, 5 acres specimen trees, &c.

The most remarkable items in this department are:—The evergreens, which exceed half a million in number, besides this year's seedlings; the 8 acres of roses; the weeping trees, covering alone over 2

acres; the Magnolias, of which there are more than an acre in one plot; the 5000 trees of the great Sequoia, or giant tree of California; and the great number of cuttings of roses and other shrubs in cold frames, exceeding 100,000, more than half of which were well-rooted by mid-summer.

The GLASS STRUCTURES for plants and propagation cover 15,500 square feet.

The PACKING-HOUSES and SHEDS, consist of one packing-house 75 by 80 feet, two stories high, with cellars beneath—a shed 150 by 24 feet—and numerous temporary sheds erected at the commencement and removed at the end of each selling season. Besides these, there are several large stables—work-rooms for both departments—and sheds for sash-frames when out of use, pots, &c.

The men employed are about 225 to 250 in the season, and about 80 through winter. Three men are constantly employed in book-keeping, correspondence, &c., in addition to the extensive labors in correspondence performed by the proprietors themselves. They have opened and built a street, which is exclusively occupied by their foremen, head workmen, &c.

There are 25 horses employed for cultivating the nursery, &c.

A single season's budding numbers



Fig. 130—*New Street opened by Ellwanger & Barry in front of their Home Nursery and occupied wholly with Dwellings for Foremen and principal Workmen.*



about 700,000 in the fruit department, and 100,000 in the ornamental. To insure complete accuracy, one of the proprietors cuts all the buds, which he immediately passes to a number of hands who accompany him, who remove the leaves, when they are marked and transferred to the foremen of the respective budding companies.

Farnum & Halsted, Lockport (2 ms. west of)—begun 1841 at L. Ontario, removed 1855—25 acres.

B. Fish & Son, Rochester, (1½ ms. w. of city)—1854—30 acres.

Henry Fellows & Son, Penfield, Monroe Co. (7 ms. e. of Rochester)—1843—40 acs.

William Ferris, Throgg's Neck, Westchester Co.—30 or 40 acres, largely of evergreens and other ornamentals.

Freeman & Kendall, Ravenswood, L. I.—small fruits only.

growing nursery trees, the remaining 60 being required for the rotation, and now in preparation for future planting. Chiefly fruit trees, small fruits, and seedling stocks. There are extensive specimen grounds of trees, 2 to 10 years old. For the past 5 years, they have annually planted 12 acres of apples with about 140,000 root grafts; 3½ acres with 40,000 quince stocks for dwarf pears; 1½ acres with 20,000 pear stocks for standard pears; 1½ with 15,000 Mazzard cherry stocks; half an acre with 5,000 Mahalebs; 2 acres with 25,000 peach stocks; one acre with 10,000 plum stocks; and half an acre with 5,000 transplanted grapes, besides 2 acres of cuttings of the grape, currant, and quince, 3 of seedling stocks, 2 of ornamentals, evergreens, &c., and 3 of strawberries and raspberries for bearing.

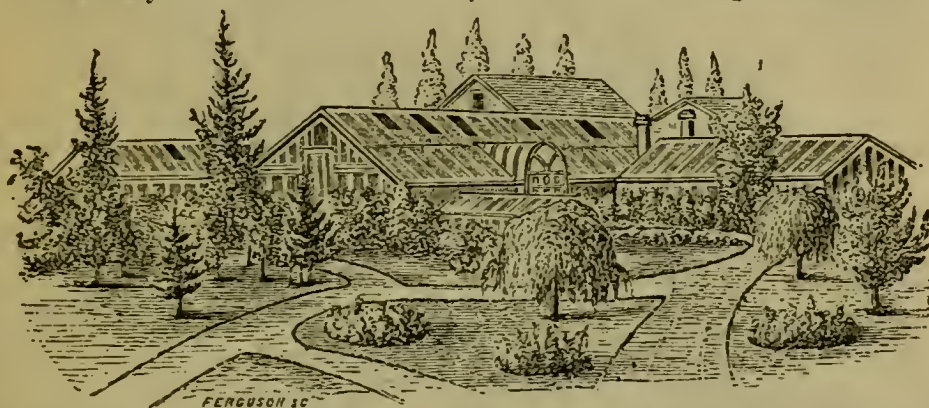


Fig. 131—Nurseries of A. Frost & Co., Rochester—Entrance and Green-Houses.

A. Frost & Co., Rochester, (south of and near the city)—1848—200 acres—one of the largest and most complete nurseries in the Union, with extensive ranges of green and hot houses, and a rich assortment of fruit trees and ornamentals. The proprietors are eminently successful in raising evergreens from seed, of which they have an extensive supply, and in the propagation of new blackberries, raspberries, and other small fruits.

E. C. Frost, Havana, Schuyler Co.—1842—a general assortment of fruit and ornamental trees.

Graves & Warner, Syracuse.

T. E. Hayward, Pittsford, Monroe Co.—11 acres.

D. Higgins, Flushing, L. Island—40 acres.

S. H. Higley, Port Byron—3 acres.

P. Hildreth & Co., Watkins, Schuyler Co.—35 acres, fruit and ornamental.

T. Hogg, Jr., Bloomingdale, (near New-York.) Westchester Co.

H. E. Hooker & Co., Rochester—home nursery on E. Avenue—commenced 1830 by a former proprietor. Whole number of acres devoted to nursery, 152, of which 90 are actually under

With the exception of during the selling season, only about 20 men are employed, care being taken to accomplish as much labor as possible with horses.

Hooker, Farley & Co., Rochester, have an extensive wholesale nursery of over a hundred acres.

S. P. Hough, Albany—2 miles n. of city.

W. M. Hoyt, Brighton (near Rochester)—mostly apple.

Isaac Jacobs, King's Ferry, Cayuga Co.

S. T. Kelsey & Co., Great Valley, N. Y.

William King, Rochester—mostly ornamental, roses, &c.

Silas B. Kelly, Brighton—30 acres.

Geo. D. Kimber, Flushing, L. I.—10 acres—new and thrifty.

King & Ripley, Flushing, L. I.—established in 1798 by James Bloodgood, and covered 12 acres up to 1829—now occupies 70 acres—hardy trees.

A. Loomis, Batavia—removed from Byron in 1857—8 acres—a large share of small fruits.

Manley & Mason, Buffalo—extensive.

McCarthy & Carter, Penfield, Monroe Co.

Matthew Mackie, Clyde—1840—12 acres.

James Mattison, Jacksonville, Tompkins Co.—25 acres—nursery and greenhouse.



**T. C. Maxwell & Brothers, Geneva**—( $\frac{3}{4}$  m. west of)—1848—140 acres—chiefly fruit trees and stocks for nurserymen, with a portion of ornamental trees—land a strong loam, all tile-drained at a cost of \$25 to \$30 per acre. It is confined exclusively to hardy trees, and is conducted with much energy and success.

**Maxwell, Bristol & Co., Dansville** (late Maxwell, Ramsden & Co.)—1853—50 acres—fruit trees, excelling in pear and plum.

**Lewis Menand, Albany**—2 miles north of the city—green-house and ornamentals.

**Moody & Son, Wright's Corner, Niag. Co.**

**Isaac Moore, Brighton, near Rochester.**

**Samuel Moulson, Rochester (N.E. of city)**—hardy trees, extensive.

**Nelson & Barker, Brighton, near Rochester**—1853—24 acres, all fruit trees.

propagation is conducted with great success, and roses on their own roots, and rare coniferous plants and trees, are specialties.

**Penfield & Burrell, Lockport.**

**W. R. Prince & Co., Flushing, L. I.**—an old and celebrated establishment, commenced about a hundred years ago, and long famed for the fine varieties of fruit which it extensively disseminated during the early history of American Pomology, and while in the hands of its early proprietors—60 or 70 acres.

**C. Reagles & Son, Schenectady**—1830—50 acres—fruit trees generally; the plum thriving finely, is largely cultivated, and 400,000 are stated to be in different stages of growth.

**C. J. Ryan & Co., Rochester**—north of city—fruit and ornamental.

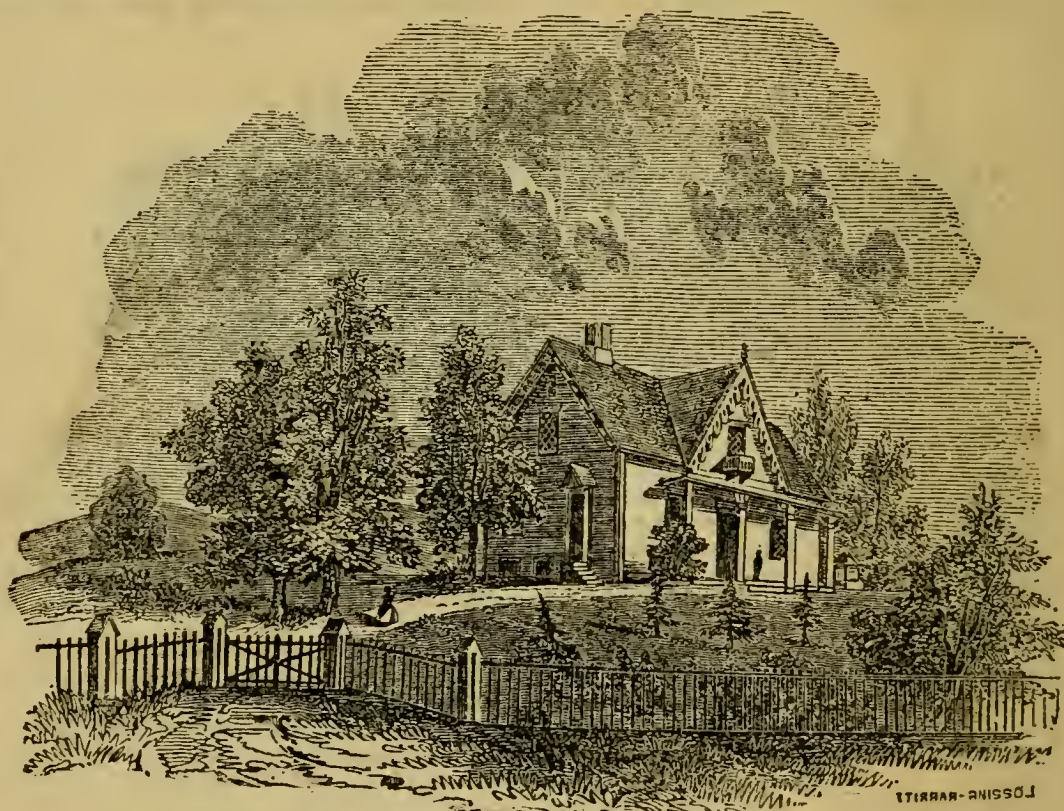


Fig. 132—Entrance to A. Saul & Co.'s Nursery, and Residence of A. Saul.

**Ontwater & Cuddeback, Wilson, Niag. Co.**  
**Parsons & Co., Flushing, Long Island**—1848—upwards of 100 acres, a first-class establishment. There are ten green-houses, most of them 100 feet long, having 14,000 sq. feet of glass, besides the frames and pits, of which there are several thousand feet—and having probably the most extensive ranges of glass structures among American Nurseries. This nursery is particularly rich in ornamental trees and shrubs. The cultivation of trees and plants of difficult

**A. Saul & Co.,** (successors to A. J. Downing) Newburgh—first commenced about 1816—in the hands of the present proprietors since 1847—40 acres, a general assortment of fruit trees and ornamentals—has very extensive specimen orchards in bearing, and among them about 500 varieties of the pear.

**J. Sloan, manager for owner, Albany**—2 miles south of city.

**W. T. & E. Smith, Geneva**, ( $\frac{3}{4}$  m. west of)—over 100 acres, with a green-house; fruit and ornamentals generally—the



whole conducted with much industry and energy.  
 Stone & Cook, (Stone about withdrawing,) Hinmanville, Oswego Co.—R. R. Station, Lamson's—20 acres, mostly apple.

speciality—and extensive and successful orchards of dwarf pears.

NEW-JERSEY.

Edwin Allen, New-Brunswick—1845—12 acres.

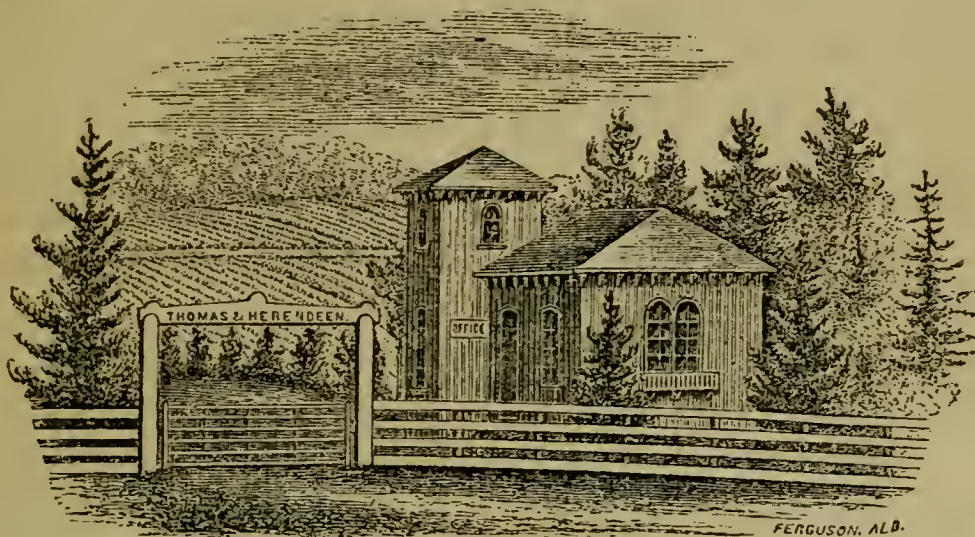


Fig. 133—Nursery of Thomas & Herendeen, Macedon—Entrance and Business Office—Distant View of Nursery, &c.

Thomas & Herendeen, (formerly J. J. Thomas,) Macedon, Wayne Co.—1838—hardy fruit and ornamental trees—a nursery of standard pears containing about 150,000, and other trees, lately planted at Union Springs, N. Y., where standard pears flourish with great success—whole nursery at Macedon and Union Springs, about 50 acres, closely planted with growing trees.

Thorp, Smith & Hanchett, Syracuse—established by A. Thorp in 1830, by planting nearly 5 acres to nursery—whole land now devoted to the business, 250 acres. Of this extent, fruit trees greatly predominate, and among these the apple and pear—20 acres are devoted to the smaller fruits; 15 to evergreens; 5 to ornamental trees; 8 or 10 to shrubs and roses and ornamental plants. There is an extensive green-house, a propagating-house, and a rose-house. This is the largest nursery in central New-York.

W. P. Townsend, Lockport—excellent specimen orchards connected with the nursery.

W. Webb, Buffalo—green-house, &c.

R. White & Co., Newark, Wayne Co.—Thorp, Smith & Hanchett of Syracuse, joint proprietors; R. White, resident manager—50 acres, all fruit trees.

Williams & Chapman, Manlius, Onondaga Co. John Wilson, Albany—green-house and ornamentals mainly.

T. B. Yale & Co., Brighton, near Rochester—about 80 acres, nearly all apple.

T. G. Yeomans, Walworth, Wayne Co.—1842—about 25 acres—dwarf pears a

David J. Griscom, Woodbury—largely of evergreens.

A. Hance & Son, Red Bank, Monmouth Co.

L. J. Harvey, Newark—1835—17 acres.

Wm. Parry, Cinnaminson—mostly small fruits.

Isaac Pullen, Hightstown—1825—42 acres, nearly one-half of which are dwarf and standard pears.

Samuel Reeve, Salem—14 acres—commenced by the father of the present proprietor soon after the Revolution.

William Reid, Elizabethtown—35 acres—remarkable as a neatly kept, accurate, and successful nursery.

George C. Thorburn, Newark.

PENNSYLVANIA.

Bockstoe & Sumner, Pittsburgh.

William P. Brinton, Christiana, Lancaster Co.—5 or 6 acres, new and thrifty.

Robert Buist, Philadelphia—a celebrated establishment, with extensive ranges of glass—roses a speciality.

Alan W. Corson, Plymouth Meeting P. O., Montgomery Co.—1845—7 acres—a miscellaneous nursery, with more than usual botanical accuracy.

J. L. Darlington & Co., (late Paschall Morris & Co.,)—West Chester—1845—about 100 acres—a general assortment, mostly fruit, of which the larger portion is apples.

Wm. P. Fisher, Unionville, Center Co.—1843—several acres.

Josiah Hoopes, (Cherry Hill Nursery,) West Chester—1854—20 acres—equal portions of fruit and ornamental trees



and shrubs—greatest, peach trees—a green-house, 3-acre arboretum, and fine specimen orchard.

Thomas M. Harvey, Jennersville, Chester Co.—1840—20 acres in nursery, and 19 acres in specimen fruit trees—one-half fruit trees, half ornamentals, largely of evergreens—green-house plants, &c.

Peter Keiffer, Andora—4 acres.

Peter Kuser, Boyertown—3 acres.

Samuel W. Lukens, Willow Grove—3 acs.

Lyte & Hough, Enterprise, Lancaster Co.—new.

Thomas Meehan, Germantown.

David Miller, Jr., near Carlisle—1842—25 acres, with ten more of specimen grnds.

Samuel Miller, Lebanon, (2 miles from) Lebanon Co.—1850—6 acres—good specimen grounds.

Henry A. Mish, Harrisburgh—1856—6 acs.

John Murdoch, Jr., Pittsburgh (2, and  $3\frac{1}{2}$  miles from,)—1843—about 20 acres and 2 green-houses.

James M. Price, Oakdale, Delaware Co.—mostly small fruits—new—10 acres.

R. Waring, Tyrone, Blair Co.—1850—4 acs.

Wm. G. Waring, Boalsburg, Centre Co.—1857—6 acres.

#### MARYLAND.

John Feast, Baltimore.

W. Feast, Baltimore.

#### DISTRICT OF COLUMBIA.

Joshua Peirce, (Linnean Hill,) near Washington.

John Saul, Washington—seed warehouse 390 Seventh-st.; nursery on Seventh-st. road—1853—80 acres, mostly new—a general miscellaneous collection—large importations made from Europe.

#### VIRGINIA.

Geo. D. Curtis, Moundsville, ( $\frac{1}{2}$  m. east of, 12 miles below Wheeling)—10 acres.

Franklin Davis, Staunton—new.

Chalkley Gillingham, Woodlawn, near Mt. Vernon.

Miller, PlOak & Co., Lynchb'g, 1855—12 acs.

Yardley Taylor & Son, Purcellville, Loudon Co.—1833—mostly apple and peach—ornamentals and green-house plants—10 acres.

#### NORTH CAROLINA.

Moses Evans, Abbott's Creek, Davidson Co.—1845—20 acres, and an extensive experimental orchard.

Westbrook & Mendenhall, Greensboro'—1853—50 acres—a general collection of fruit trees and ornamentals, apple and peach predominating—a large green-house, and extensive experimental orchards—much has been done to test southern apples.

#### GEORGIA.

F. A. Mange, Augusta—nursery consists chiefly of roses on their own roots.

Peters, Harden & Co., Atlanta.

P. J. Berckmans & Co., Augusta—30 acs.

J. Van Buren, Clarksville.

#### MISSISSIPPI.

Thomas Affleck, Washington.

W. A. Whittfield, Shelby, Bay St. Louis, on the Bay of St. Louis—1853—23 acres, mostly peach and pear.

#### KENTUCKY.

Peter H. Barker, Greenville—1856—20 acs. Carey, Peters & Carey, Louisville (7 ms. east of,)—1856—22 acres.

Geo. S. Curtis & Co., Maysville—1856—30 acres, and green-house—new.

M. J. S. Downer, Elkton.

Hobbs, Walker & Co., Williamson, Jeffer-Co. (12 ms. east of Louisville by R.R.)—1853—40 acres—a general assortment, fruit trees, evergreens, &c.

Jacob Johnson, Cedar Creek, Jefferson Co.—1850—8 acres.

#### OHIO.

M. B. Batcham & Co., (Proprietors, M. B. Batcham and Ellwanger & Barry,) Columbus—commenced spring of 1855—20 acres planted that year, and 20 each succeeding year, now 80 acres—mostly fruit trees, but ornamental department extensive, and importations of evergreens made yearly from Europe—a hot-house and conservatory, and extensive specimen grounds—a first-class western nursery.

E. Bonsall, Jr., Salem—1846—20 acres, fruit and ornamental, and green-house—5 acres of evergreens.

Wm. Case, Cleveland—1848—conducted wholly by C. Weiges, foreman.

Clarke & Stalter, Lancaster—1846—25 acs.

J. S. Cook, (Walnut Hills,) Cincinnati—1846—20 acres, and green-house.

Edmond Craig, Cheviot, Hamilton Co. (5 ms. n. w. of Cincinnati)—1848—30 acres in compact nursery—nardy fruits and ornamentals.

Wm. Curtis, Brighton, Cuyahoga Co.—1851—6 acres.

George Dana & Son, Belpre—1817—10 acs.

James Edgerton, Barnesville, Belmont Co.—1850—15 acres.

A. Fahnestock & Sons, Toledo—about 70 acres, a part new; and a part the Old Toledo Nursery—a general miscellaneous collection.

J. Gallup, Cleveland—an old nursery.

J. L. Galloway, Milford, Clermont Co.—1855—8 acres.

H. N. Gillett, Quaker Bottom.

Joseph Harris, St. Clairsville, Belmont Co.—6 acres.

Wm. Heaver, Cincinnati.

James Houghton, Cleveland—5 acres, a part of Morse & Houghton's former nursery.

S. S. Jackson, Cincinnati.

M. Kelly & Co., Cincinnati.

W. B. Lipsey, Cardington ( $2\frac{1}{2}$  ms. e. of,) Morrow Co.

A. McIntosh, Cleveland—1854, and before—8 acres, chiefly ornamental.

S. B. Marshall, Massillon—1846—8 acres.  
T. W. Morse, (a part of former Morse & Houghton's,)—5 acres.

L. Nicholson, East Rockport, Cuyahoga Co. (4 ms. west of Cleveland)—1850—25 acres.

A. Robinet & Sons, Bedford, Cuyahoga Co.—1844—12 acres, and good specimen trees in bearing.

John Sayers, Cincinnati.

Dr. Edward Taylor, Cleveland—1856—35 acres—a general collection of fruit trees—a vigorous young establishment.

Toledo Nursery Association, Toledo.

J. T. Warder, (formerly Warder & Gilmore,) Springfield (1½ m. e. of.)—25 aca.

I. W. Weld, Richfield, Summit Co.—1846—quite small.

Williams & Lewis, Dayton—1855—15 aca.

Samuel Wood & Son, Smithfield, Jefferson Co.—1816—15 acres, and extensive grounds of specimen trees in bearing.

#### MICHIGAN.

Wm. Adair, Detroit (east side of.)—1842—25 acres, 12 of which is in trees, the rest in vegetables for rotation—the pear a speciality.

D. Cook, Jackson.

Hubbard & Davis, Detroit (2 ms. w. of.)—1846—20 acres, 16 under trees—a green-house and propagating-house—a general and miscellaneous collection.

Inglefit & Bentley, Monroe.

Wm. L. Randall, Adrian—1856—7 acres.

B. W. Steere, Adrian—1851—10 acres of select sorts and a good specimen orchard.

Tomlinson & Brother, Battle Creek (½ m. e. of R.R. Station.)—1854—20 acres.

#### INDIANA.

Geo. H. Andrews, Laporte.

John J. Conley, Richmond.

Jonathan Cogshall Jonesboro', Grant Co.

W. T. S. Cornett, Versailles.

I. N. Davis, Connersville, Fayette Co.

Peter Fulhart, Muncie, small and new.

Hill, Goldsmith & Co., Indianapolis.

Gardner Mendenhall, Richmond.

Griffith Mendenhall, Richmond.

Thomas B. Morris, Cambridge City—7 acres.

Railsback & Hutton, Richmond—25 acres.

J. C. Teas, Raysville, Henry Co.—1843—25 acres, hardy fruits and ornamentals.

E. Y. Teas, Richmond—1857—6 acres.

#### ILLINOIS.

Verry Aldrich, Tiskilwa, Bureau Co. (3 miles from Bureau Station)—1852—10 acres, and bearing specimen trees.

I. C. Allen, Lena, Stephenson Co.—20 aca.

H. N. Bliss, Buda, Bureau Co.—1852.

Arthur Bryant, Princeton, Bureau Co.—extensive nurseries and orchards.

John B. Burbach, Princeton, Bureau Co.—6 acres.

Jabez Capps & Son, Mt Pulaski, Logan Co.

A. S. Coe, Port Byron, Rock Island Co. Colman & Drake, Bloomington—10 acres, all apple.

E. B. Colman, Peoria—somewhat extensive, and green-house and orchards.

John A. Cook, Pavillion—1850—10 acres.

Dent & Verner, Wenona, Marshall Co.—1853—11 acres apple, 30 acres Osage hedge plants.

Robert Douglass, Waukegan, Lake Co.—1847—28 acres.

Michael Doyle, Springfield—(2 ms. w. of.)—chiefly fruits, some ornamentals, green-house & pits.

M. L. Dunlap, Leyden, Cook Co.

Samuel Edwards, Lamoille, Bureau Co. 30 acres nursery, and 12 strawberries—a well known establishment.

Lewis Ellsworth & Co., Napierville, DuPage Co.—1849—75 acres—40 acres apple—fruit and ornamentals, green-house and propagating-house. A branch of the same, 15 acres, at Wheaton, same county.

Emmert & Wheeler, Freeport—new establishment.

Isaac B. Essex, Drury, Rock Island Co.—1847—7 acres, and good bearing specimen orchard.

O. B. Galusha, Lisbon, Kendall Co.

John Garner, Nova, Jo Daviess Co.—8 or 10 acres.

Havens & Austin, Cass—1855.

William T. Henning, Palo—6 acres.

R. Herring, Durand, Winnebago Co.

C. H. Hibbard, Marengo, McHenry Co.

N. & C. G. Hotchkiss, Belvidere, Boone Co.—1850—14 acres.

J. Huggins, Woodburn, Macoupin Co.—1854—10 acres.

J. A. Kennicott & Sons, West Northfield, Cook Co.—fruit and ornamental—extensive and well known.

D. F. Kinney, Rock Island—1853—8 aca.

I. S. Knowlton, Byron, Ogle Co.—1847—12 acres.

J. T. Little, Dixon—1850.

Tyler McWhorter, Millersburg, Mercer Co.—extensive specimen orchard.

Manly & Lowe, Marshall, Clark Co.—1857—10 acres.

Dr. I. D. Maxon, Henry, Marshall Co.—(formerly W. Mann.)

Otis Marble, Thompson's, Lake Co.

S. G. Minkler, Kendall—1852—11 acres.

Luman Montague, West Point, Stephenson Co.—small.

J. Moore, Dimond's Lake, Lake Co.

E. Ordway, Freeport.

Overman & Mann, Bloomington—fruits and Osage orange—the largest Osage plant and seed dealers perhaps in the Union—have raised in some seasons twelve or fifteen millions of plants, and had 1000 bushels of the seed—an energetic and intelligent firm.

Thomas Payne, Fremont Center, Lake



- Co.—extensive grounds of specimen trees.
- L. S. Pennington, Sterling, Whiteside Co.—1842—30 acres, and large collection of specimen trees.
- F. K. Phoenix, Bloomington—1852, and for many years before at Delavan, Wis.—50 acres—extensive specimen orchards.
- Rogers, Woodward & Glass, Marengo, McHenry Co.—1853—12 acres.
- A. Ross, Ottawa—1856.
- Edgar Sanders, near Chicago—1857—ornamentals, &c.
- D. C. Scofield, (of the firm of Stephen Hoyt & Co., New-Canaan, Ct.,) Elyra, Ill.—40 acres.
- Henry Shaw, Tremont, Tazewell Co.—1849—20 acres.
- J. S. Sherman, Rockford—1854—20 acres.
- E. H. Skinner, Marengo, McHenry Co.—21 acres.
- H. Strickland, Roscoe, Winnebago Co.—1851—10 acres
- Stuart & Sons, Quincy and Payson, Adams Co.—extensive Pomological grounds.
- John R. Tull & Son, Pontoosac (2½ miles from,) Hancock Co.—1847—15 acres, and many bearing specimen trees.
- S. J. Wallace, Carthage, Hancock Co.—1857.
- C. C. Wamsley, Palo—1851—12 acres.
- A. R. Whitney, Franklin Grove, Lee Co.—50 acres or more—one of the largest and best western nurseries, with extensive bearing orchards.
- Willard Brothers, Kewanee, Henry Co., 30 acres—green-house and hedge plants.

## MISSOURI.

- Husman & Manwaring, Hermann.
- John Sigerson & Brother, St. Louis (a few ms. s. of city)—1843—200 acres devoted to nursery, besides 36 acres in strawberries, and 30,000 bearing fruit trees—green-houses, &c. One of the largest nurseries in the West.

## WISCONSIN.

- J. C. Brayton, Aztalan, Jefferson Co.
- Colby & Willey, (formerly Charles Colby) Janesville—1848—20 acres.
- E. B. & J. F. Drake, Janesville.
- F. Drake & Co., Racine.
- N. C. Gaston, Delavan, Walworth Co. (begun in 1843 by F. K. Phoenix,) 10 acs.
- Charles Gifford, Milwaukee.
- A. G. Hamford, Waukesha.
- J. C. Plumb & Co., Lake Mills.
- J. S. Sherman, Richmond, Walworth Co.
- Levi Sterling & Co., Mineral Point—new.
- Stickney & Loveland, Wauwatosa, Milwaukee Co.—1855—8 acres.
- William Von Baumbach, Milwaukee—10 acres.

## IOWA.

- Owen Albright & Co., Keokuk.
- John W. Bennum & Co., Prairie Grove, Clark Co.

- S. R. Boardman, Lyons—1854—20 acres, mostly apple.
- Reuben Brackett, Lewis, Cass Co.
- Gustavus B. Brackett, Denmark, Lee Co.—1842—12 acres.
- A. W. Comstock, (formerly Avery & Comstock,) Burlington—40 acres—apple.
- John Evans, Davenport, (5 ms. east of)—1846—3 acres, small fruits and ornamentals.
- Finley & Dwire, Davenport, (a few miles west of)—extensive.
- Foster & Negus, Muscatine—extensive.
- Horr & Beebe, Dubuque—1848—20 acres, mostly apple.
- Wm. Laer, Garden Grove, Decatur Co.—1854—4 acres.
- David Leonard, Burlington—30 acres, nearly all apple.
- Wm. Longworth, Dubuque—1848—20 acres, mostly apple.
- Neally, Brothers & Bock, Burlington—1846—30 acres, nearly one-half ornamentals and small fruits—2 acres roses, 3 of evergreens—50 acres more of orchard and specimen trees. Nursery on Mississippi bluffs, and pear and apple grow to great perfection.
- W. H. Plumb, Ft. Dodge—4 acres.
- James Smith, Fort Des Moines.
- Saunders & Co., Decatur City.
- James Weed, Muscatine.
- Wm. Zimmerman & Co., Oskaloosa.
- [Apple trees are largely raised at Burlington, and probably a million trees are now offered there for sale.]

## MINNESOTA.

[During the past eight years, about twenty nurseries have been commenced in different parts of Minnesota, but owing to the severity of the climate and other causes, most of them have been relinquished.]

- L. M. Ford & Co., St. Paul (between St. Paul and St. Anthony)—1850—the most extensive on the Mississippi above Dubuque—mostly hardy fruits—the climate too severe for peaches, but grapes and all small fruits do well—40 acres are devoted to seeds and market gardening.
- Robert Goodyear, Mankato—small—new.
- A. Stewart, Le Seur—1856—10 acres.

## KANSAS.

- Geo. C. Brackett & Co., Lawrence.

## NEBRASKA.

- Joel Draper, Nebraska City—new.
- James H. Masters, Nebraska City—1854—a general assortment of fruit trees and ornamentals—extensive.

## CALIFORNIA.

- [Nurseries generally in this State require *irrigation* for successful growth.]
- G. G. Briggs, Brigg's Ranch, Maysville—1852—extensive, mostly peach. From the extensive market orchards connected with this nursery, there were sold \$22,000 of fruit from 240 peach trees in

- 1857—67 peaches weighed 65 lbs., and sold for \$48.75.
- A. H. Myers, Alameda, Alameda Co.—1853—15 acres, fruit and ornamental.
- L. Prevost, San Jose, Santa Clara Co.—1854—4 acres, fruit and ornamental.
- Reed & Co., Sacramento City—1854—40 acres, fruit trees.
- A. P. Smith, Sacramento City—1853.
- Smith & Winchell, San Jose, Santa Clara Co.—1853—40 acres, mostly fruit, greater part apple.
- Wm. Neely Thompson & Co., Napa, Napa Co.—1853—extensive.
- CANADA.
- Charles Arnold, Paris, C. W.—1852—5 acres, all fruit trees.
- Thomas Burgess, London, C. W.—1854—10 acres.
- Robert Cairns, Galt, C. W.—1851—10 acres, all fruit trees.
- J. Caldwell & Brother, Waterloo, C. W.—1848—40 acres, chiefly fruit trees—1 green-house.
- James Dougall, Windsor, op'site Detroit.
- Dunning, Campbell & Co., Wellington Square, C. W.—20 acres.
- Fairchild & Kelsey, Mohawk P. O., Grant Co., C. W.—1849—14 acres.
- D. Fisher, Bowmansville, C. W.—1850—20 acres, fruit and ornamental.
- James Flemming, Yonge-st., Toronto, nurseryman and seedsman—1842—extensive green-houses.
- J. W. Gilmour, Peterboro', C. W.—1851—20 acres, fruit and ornamental, and 1 good green-house.
- John Gray & Dr. Gwyne, Toronto—1850—10 acres—green-house.
- James Greig, Pickering, C. W.—1848—15 acres.
- E. Hubbard, Guelph, C. W.—1848—10 acres, all fruit trees.
- E. Kelly & Co., Hamilton—1840—60 acres, chiefly fruit trees—a vigorous establishment.
- George Leslie, Toronto, C. W.—1844—75 acres, three-fourths fruit trees, the rest ornamentals. There are two large green-houses—one of the most extensive nurseries, if not the most so, in Canada.
- B. Losie, Cobourg, C. W.—1854—10 acres.
- I. P. Lovekin, Newcastle, C. W.—1848—30 acres, mostly apples and cherries, and a share of ornamentals, chiefly evergreens.
- D. Nichol & Co., Lyre, near Brockville, C. W.—1854—8 acres.
- J. P. Thomas, Belleville, C. W.—1852—8 acres, fruit and ornamentals.
- John S. Walker, Erie, C. W.

## PRINCIPAL NURSERIES IN EUROPE.\*

### ENGLAND.

- J. Backhouse & Son, York—extensive—largest and best nursery at that city.
- G. Baker, Windlesham, near Bagshot, Surrey—American plants a speciality.
- Bass & Brown, Sudbury, Suffolk.
- Chandler & Sons, Wandsworth Road, Surrey—extensive ranges of glass—collection of camellias unsurpassed in England.
- J. & J. Cranstone, King's Acre, Herefordshire—extensive in roses.
- G. Cunningham & Son, Liverpool—a large general nursery.
- J. Cuthill, Camberwell, Surrey—small fruits and superior vegetables, &c.
- F. & J. Dickson & Sons, Manchester—forest trees, evergreens, &c.
- Donald & Son, Woking, Surrey.
- Fisher, Holmes & Co., Sheffield and Handsworth, Yorkshire.
- Garraway, Myers & Co., Bristol—a celebrated and extensive establishment, in the green-house and out-door departments.
- R. Glendinning, Turnham Green, near London—rare green-house plants.
- J. Griffin, Bath—the largest nursery near this city.
- H. Groom, Clapham Rise, Surrey—bulbs.
- J. A. Henderson & Co., Edgware Road, Middlesex—new and rare plants—a neat and extensive establishment.
- E. G. Henderson, St. John's Wood, Middlesex—new plants, doing a large *wholesale* business.
- W. Holland, Brompton, Middlesex—extensive in fruit trees.
- G. Jackman, Woking, Surrey—American plants, &c.
- W. Jackson & Co., Bedale, Yorkshire.
- Jackson & Son, Kingston, Surrey—green-house plants, &c.
- H. Lane & Son, Great Beekhamstead, Herts—extensive in roses.
- J. & C. Lee, Hammersmith, near London—an old and celebrated plant nursery of great extent and richness.
- H. Low & Co., Clapton, Middlesex—very extensive in glass and green-house plants.
- Lucombe, Pince & Co., Exeter, Devon—a large general nursery.
- W. Maule & Sons, Bristol.

\* J. SAUL of Washington City, and ELLWANGER & BARRY of Rochester, have furnished important materials for this list.



Osborn & Sons, Fulham, Middlesex—rare and fine trees, &c.

A. Paul & Son, Cheshunt, Herts.—famed for its roses, hollyhocks, conifers, &c.

T. Rivers, Sawbridgeworth, Herts—70 acres—the most extensive cultivator of fruit trees in England—a vast collection of roses, &c.

Rollinson & Son, Tooting, Surrey—vast ranges of glass, with orchids, heaths, &c., in great perfection.

J. Salter, Hammersmith, Middlesex—fl't.

W. Skirving, Liverpool—a great nursery, with vast collections of evergreens.

G. Standish, Bagshot, Surrey—celebrated for rhododendrons, &c.

C. Turner, Slough, Bucks—a general establishment, and the most extensive in England in florist collections, as dahlias, hollyhocks, pansies, carnations, tulips, &c.

J. Veitch & Son, Exeter, Devon, }  
J. Veitch, Jr., Chelsea, Middlesex, } the  
greatest collections of new and rare  
plants in Europe.

J. Waterer, Bagshot, Surrey—American plants and a general nursery.

Waterer & Godfrey, Knaphill, Woking, Surrey—general and extensive—peat plants a speciality.

J. Weeks & Co., Chelsea, Middlesex—rather new.

Youell & Co., Great Yarmouth, Norfolk.

## SCOTLAND.

Cunningham, Frazer & Co., Edinburgh.

Dickson & Co., “

J. Dickson & Sons, “

Downie & Laird, “

P. Lawson & Son, “

Stewart & Sons, Dundee.

W. Urquhart & Sons, “

## FRANCE, BELGIUM, HOLLAND, ETC.

Andre Le Roy, Angers, France—a general and very extensive nursery.

D. Dauvesse, Orleans, France—a general nursery.

Jamin & Durand, Paris—fruits.

E. Verdier & Son, Paris—roses, pæonies, &c.

Thibout & Keteter, Paris—plants.

L. Van Houtte, Ghent, Belgium—plants.

Ad. Papeleu, Wetteren, Belgium—hardy trees.

A. Verschaffelt, Ghent, Belgium—plants.

J. De Jonghe, Brussels, Belgium—fruit trees.

J. Linden, Brussels, Belgium—rare plants, a great collection.

A. Mielliez, Lille—new sorts of chrysanthemums and other flowers from seeds.

Ernst & Von Spreckelson, (successors to J. Booth & Co.,) Hamburg, Germany.

Krelage & Son, Harlaem, Holland—bulbs.

De Lange & Sons, “ “ “

F. Van Velson, Jr., “ “ “

E. C. Van Eden & Co., “ “ “

## DEXTER SNOW ON THE VERBENA.

[The following excellent practical remarks on the treatment of this beautiful plant, were furnished by DEXTER SNOW, the most eminent and skillful cultivator of the Verbena in this country, and who carries on an extensive business in its propagation and sale.]

There is probably no flower that will afford more real pleasure or satisfaction for the outlay of money and labor, than this little gem. The brilliancy and great variety of its colors, the long-continued season of bloom, and its adaptedness to our hot summer sun, renders it the most valuable of all bedding plants. Many varieties are also admirable for vase or pot culture, and when properly managed as a house plant, will bloom profusely from January to May.

To grow them successfully, whether in-doors or out, they must be fully exposed to the sun, as they will not thrive without it. When grown as a house plant, they should be placed near the glass where the sun may reach them the greater part of the day. Give them a good airing each mild sunny day, by partially raising the window for an hour or so. This is quite indispensable to the health and stocky growth of the plant. The temperature of the room in the vicinity of the plants should average



Fig. 134—VERBENA.

about  $60^{\circ}$  in the day-time and  $45^{\circ}$  at night. High night temperature causes the plants to spindle up and grow weak and sickly.

Water the plants only when actually necessary, or when the soil appears dry, and then do it thoroughly, taking care to pour off what falls into the saucer. Shower the foliage occasionally, to keep it clean and free from dust. In all cases use rain water for house plants.

Fumigate with tobacco as often as the *Aphis* or green-fly appears. This may be done by placing a dish of coals under the plant stands, and throwing on a handful of tobacco; or to avoid having the smoke in the sitting-room, set the plants in a group upon the kitchen floor; place a few chairs about them, over which throw an old quilt or carpet—let it reach the floor, so as to retain the smoke; place the coals and tobacco underneath, but not so near the plants as to scorch them. Ten or fifteen minutes smoking will destroy all the insects.

As a fertilizer for the Verbena, the sulphate of ammonia is excellent, giving to the foliage a dark-green, luxuriant and healthy appearance. It is economical, clean and easily applied. Prepare it the evening before



using, by dissolving one ounce of the ammonia in two gallons of water. It may be applied once a week with safety. A good fertilizer may be made by dissolving one pound of guano in ten gallons of water, letting it stand twenty-four hours before using. Apply it once a week.

For garden culture, the ground should be prepared in the fall by throwing it into ridges, and spreading over it a quantity of old and well decomposed manure. In thus exposing the whole to the action of frost, the worms and larvæ of insects are in a measure destroyed, and the soil becomes pulverized, and receives a share of ammonia from the snows and rains of winter. In preparing the beds or mounds in the spring, care must be taken not to get them too high, or the plants will suffer from drought. The ground should be spaded deep and the manure well worked in. Let the plants when put out be young, strong and healthy. Get them out as early in the season as the weather will permit, so that they may get a good start before the hot weather comes on—they will then keep out of the way of the root-louse.

In very dry weather the plants should be thoroughly watered every evening, and occasionally with guano. Keep the soil well worked about the plants, to prevent its becoming baked.

For a select list the following are very desirable, being strong growers, free bloomers, and showing large trusses of flowers that will stand the sun. Those with stars prefixed are very fine for vase or pot culture:

- \* Geant des Batailles—Deep scarlet crimson.
- \* Charles Dickens—Rosy Purple.
- \* Imperatrice Elizabeth—Striped; should be in every collection.
- \* Mrs. H. Williams—Pure white.
- Metropolitan—Bluish purple, fragrant.
- Purple Perfection—Maroon purple.
- Defiance—Intense scarlet.
- \* Madam Abelt—Deep purple maroon.
- \* Mrs. Archer Clive—Ruby crimson.
- \* Etoile de Venus—Rosy pink, very large.
- Lord of the Isles—Clear deep rose.
- Gen. Simpson—Rose red, tinted with carmine.

## MANAGEMENT OF POULTRY.

BY D. S. HEFFRON OF UTICA.

On introducing the subject of Poultry to the readers of "The Annual Register of Rural Affairs," it may not be out of place to say, in justification, that the breeding of domestic poultry is valuable as a source of profit, as a means of a cheap and healthful amusement, and as affording a fruitful field of instruction.

Poultry may be kept on a small scale, in village, city or country, by almost every family. It is only when the stock is large that it requires more skill to make it "pay." Yet in England, Ireland and France, there are large sections of country where the raising of poultry for the city

markets constitutes the principal employment of the poorer and middle classes of the inhabitants, and is the only means of support of many.

Most persons have some time in life, been interested in feeding, watering, and caring for some feathered "pets." But while cage birds are not accessible to all, and some of them require much care and make no moneyed returns, poultry-keeping offers a self-supporting and healthful recreation and enjoyment to all classes of society. Our clergymen, teachers, lawyers, editors, merchants, bankers, as well as those who toil in the machine shop, the factory, or the furnace, each and all daily need some such light, amusing, recreative and healthful employment. Mowbray says:—"There is yet another point of view from which to hail the increasing and extended taste for poultry-rearing, so recently sprung up, as being calculated to produce effects of the highest social importance. We mean the humanizing (we had nearly said civilizing,) influences it cannot fail to exercise upon the teeming masses of our industrious town populations."

Poultry, by their early maturity and reproduction, afford one of the best opportunities to study the transmission of hereditary forms, colors, diseases, instincts and peculiarities, the influence of climate, food, &c., &c.

One of the first considerations to such as are about to commence poultry-breeding, is to select a suitable site for a poultry yard and house; for we think that few families in city or country, are so situated that they can keep any considerable number of fowls profitably, if they have not a suitable yard where they can be restrained at pleasure from doing damage to the garden and field. A gravel or a sandy soil, with a porous substratum, is the best of all soils for such a purpose. If it has an inclination to the south or east, all the better. But a poultry-yard must be dry to secure the health of the fowls; so if the soil is clayey, or retains moisture from any other cause, it must be properly drained; and it would improve it much to raise it by carting on a liberal quantity of sand and gravel. The size must of course vary with the number of fowls to be kept, but the larger the yard the better; and it is especially desirable to have a grass plat at one end. The Spanish, Dorking and Shanghae fowls will bear confinement in small yards remarkably well, if the yard is dry, and the birds are fed daily with some kind of green food, as cabbage leaves, lettuce, white clover, and other tender grasses. The Hamburgh family, Polish, and most Game fowls are impatient in restraint, and do much better wherever they can have a wide range.

Fig. 135 is a cut of a poultry-house, (first published in "The Cultivator,") which is a model for cheapness, is very neat in its appearance, and quite as convenient as many much more expensive houses.

The length of such a house may of course be made to vary according to the number of fowls to be kept. If a ventilating tube should be put into each end of this house, it would very comfortably accommodate fifty



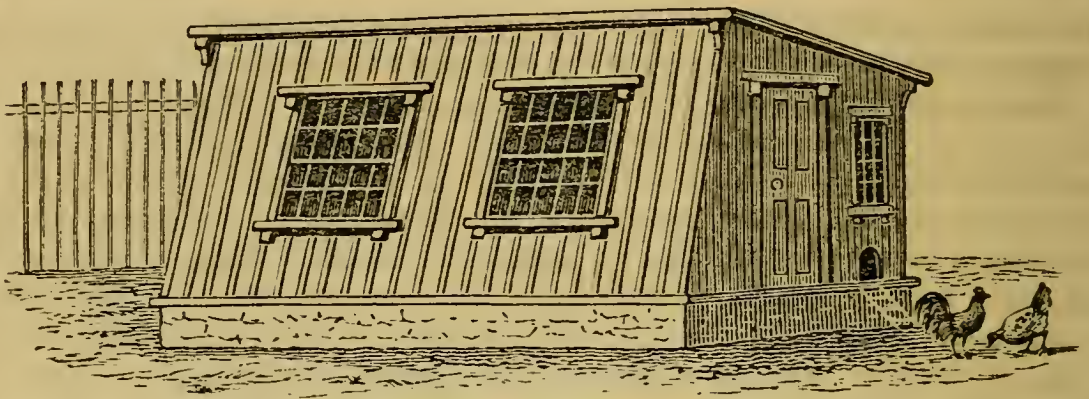


Fig. 135—POULTRY-HOUSE.

fowls, twenty-five in each apartment; though if it were so heavily stocked, the droppings should be removed daily, as much as the horse-stable or the cow-stable should be cleansed daily.

We give the ground plan and section below, which exhibit the arrangement so clearly that any mechanic could easily build one like it.

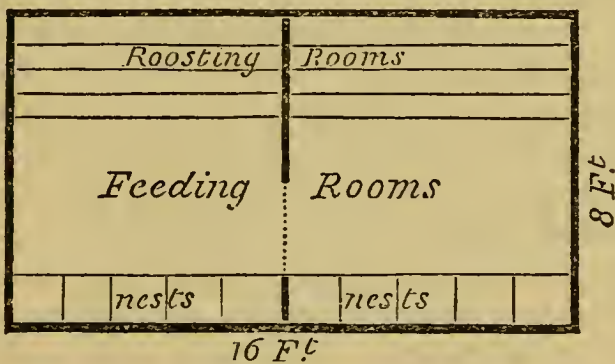


Fig. 136—GROUND PLAN.

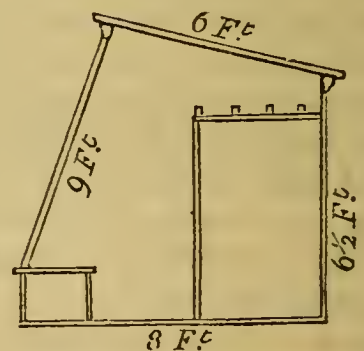


Fig. 137—CROSS SECTION.

We should prefer to make the house one foot wider and a foot higher. This would give room enough to stud the house with three-inch studs, and to line it with one-inch matched boards. It should also be covered with narrow, sound, matched boards, and battened. Then fill up the space between the studs with dry tan, and nothing more is needed for warmth. Such a house would protect fowls with the largest combs from the influence of severe frosts, and beside, would furnish a large dividend on the additional expense, by daily installments of fresh eggs all winter.

The best material for the floor is a mixture of sand and gravel pounded down very firmly. The floor should be raised from 10 to 12 inches above the earth on the outside of the building, so as to guard against moisture. Bricks should never be used for paving the floor, as they absorb so much moisture from the earth that they keep constantly wet, and poultry cannot bear cold, wet feet much better than unfeathered bipeds can, without becoming rheumatic and gouty, and even ropy.

In winter every poultry-house should be furnished with a low box filled with dry wood ashes, and if mixed with a little dry sand, all the better.

In summer this "dusting bath" should be removed to the yard, and placed under an open lean-to shed, where it can be kept dry. Such a shed is easily made in one corner of the yard, by placing a few short boards over a frame, (made by driving four stakes into the ground, and nailing two cross strips to the tops about three or four feet from the ground.) This would also provide suitable shelter for the fowls in rainy weather.

In winter, another box, filled with old dry lime mortar, calcined bones, pounded oyster shells, and dry gravel, should be placed in the feeding apartment of the house.

*Every house in winter, and yard in summer, should have fresh water once or twice daily.*

By whitewashing the inside of the house two or more times each year, it may be kept free from all kinds of parasites.

Below we give a plan of a very convenient poultry-yard, divided so as to accommodate four varieties of fowls. The house, which should be built in the rear, would have to be 32 feet long by 8 or 9 feet wide; it should have four front windows, and should be divided into the same

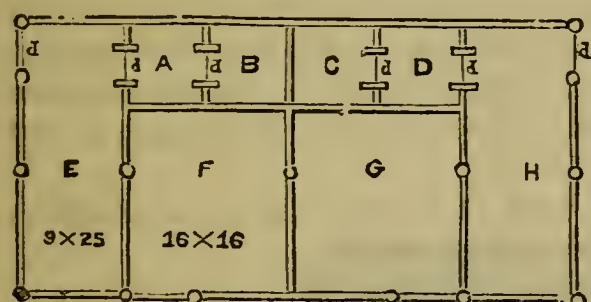


Fig. 138—PLAN OF FOWL HOUSE AND YARD.

number of apartments by tight partitions made of matched boards. Each apartment should have a ventilating chimney. The references will explain it better than any description.

A B C D. Divisions of the poultry-house, 8 by 9 feet—E F G H. Yards. The yards should be tight-boarded, about two feet high, with slats above four feet, making the whole six feet high. The whole plan covers but 25 by 50 feet. It is better to have the yards larger, if the fowls are to be kept in them constantly.

If a large number of fowls of any variety is to be provided for, it is far better for the health of the birds, to build several small, separate houses than one large one.

Whenever a hen becomes broody, and it is proposed to give her a setting of eggs, it would be well to examine the top of her head and under her wings, and if any lice are found, either discard her, or rub on these places some kind of soft grease or oil. Then give her a fresh nest, and only a moderate number of eggs, so that they may be well covered at all times. She should be protected from the annoyance of laying fowls while sitting. When about to hatch, grease these parts again, and then leave her until all her brood of chickens are out. Remove the young brood and mother to a clean dry coop, free from vermin. If they come off early in the season while the ground is cold and damp, a part of the coop at least should have a board bottom, so that the hen



can carefully brood her young in a dry place. The hen should be fed, and supplied with fresh pure water at this time, as it is probable that she did not leave her nest for at least forty-eight hours before the chicks were all out. But the brood will need no feeding before they are twenty-four hours old; then feed some dry bread pounded fine. Soon a little pounded wheat, finely cracked corn, and hulled barley may be given to advantage. Some persons always feed young chickens with fine corn-meal, wetted up with water into a kind of dough. This food is strongly condemned by others; for if any of it is fed after standing until it begins to sour, it is known to be a positive injury. It is better not to feed it at all unless it is cooked; then mix it with a few boiled potatoes mashed finely, and it makes an excellent article of food. Curd of milk in limited quantities, is good food for young chickens. If too much trouble to prepare the curd, milk, either sweet or sour, may be freely given to fowls at any age with very beneficial results. Some breeders recommend that fresh meat be given in small quantities two or three times each week. We think it better to give the chickens when small the range of the garden, where they can catch their own meat and do good beside. Every one will of course see the propriety of feeding chickens frequently and regularly, unless the hen can scratch for them; beside, they must have fresh water in shallow pans to prevent accidents, or the water vessel if kept full, may be covered with a coarse wire screen.

**POULTRY COOP.**—This coop (fig. 139) is made by nailing short pieces of matched boards together, as indicated in the accompanying cut; then board up the rear end tightly; nail narrow strips of boards or lath in front; put a floor of boards in the back

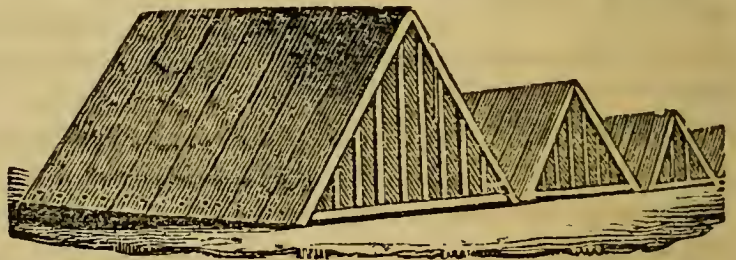


Fig. 139—POULTRY COOP.

part of the coop, large enough for the hen to brood her young upon, and lay a wide board in front to feed upon as long as the width of the coop, and we have as good a coop as can be made. The coop should be at least two feet high and from two to three feet deep. The board in front may be turned up at night to protect the young against rats, cats, &c., and should remain in the morning until the dew is off from the grass. The coop should be moved every two or three days to a clean place.

**POULTRY FEEDING-TROUGH.**—The feeding-trough here represented (fig. 140) is very cheap and convenient. It is made by nailing together two pieces of boards on one edge, in form of two sides of a triangle; one piece



Fig. 140—POULTRY FEEDING-TROUGH.

should be six and the other seven inches wide, and then finish by nailing on the end pieces, which should be about eight inches wide and twelve long. To keep the fowls from getting into it with their feet, put a grate over the top, (made by nailing cross slats to two or three laths running lengthwise. The grating should be fastened so that the trough can be cleaned at pleasure.

#### FATTENING FOWLS.

If it is desired to fatten fowls in a very short time, they should be confined in small coops. Baily says:—"A coop for twelve fowls (Dorkings) should be thirty inches high, three feet long, and twenty-two inches deep; it should stand about two feet from the ground, the front made of bars about three inches apart, the bottom also made of bars about an inch and a-half apart to insure cleanliness, and made to run the length of the coop, so that the fowl constantly stands, when feeding or resting, in the position of perching; the sides, back, and top may be made the same, or the back may be solid." Some writers think it better to make half of the floor a little inclined, and to cover it with a board. Troughs for feed and water should be fastened around the edge of the coop, and the whole placed in an out-building, as a barn or shed, away from other fowls. For the first twenty-four hours give water, but no food. On the second day commence feeding regularly three times daily with the most nutritious food, such as oatmeal mixed with milk, boiled wheat, &c., &c. The troughs should be cleansed daily, and a plenty of fresh clean water given; and the fowls must be fed very early in the morning, and all they will eat at all times. In from fourteen to twenty days they will be in their best condition, when they should be killed, for if kept longer they soon become diseased.

Poultry may be fattened quicker and more perfectly by stuffing, but it is an unnatural as well as an inhuman practice, and we cannot recommend it.

Dorking, Spanish, Game, Hamburgh, and Polish chickens hatched the last of May, in latitude 43°, will do well to fatten when three months old, but Shanghæ, Malay and Java chicks should be at least a month older.

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#### WORK-SHOPS AND STORMY DAYS.

Every farmer who has boys should provide them a *work-shop*. It may be a building erected on purpose, or else partitioned off from the carriage-house, corn-house, or other out-building. Let it be neatly made, and not unpleasantly situated, for it should be attractive and not repulsive to those for whom it is intended. It should be tight, and furnished with a small stove, so as to be comfortable in winter. It should be provided with a work-bench and vice, a shaving-horse for using the drawing-knife, and perhaps a small foot-lathe. The two latter are convenient but not essential. The tools should be two or three planes, augers of different sizes, a



few chisels, a brace-bit, drawing-knife, saw, and hammer. A small part of these will answer, and others may be added—the cost of the tools varying from five to twenty-five dollars.

Such a work-shop will afford several important advantages. The greatest is the assistance it will render the cause of *practical education*. The best inheritance any man can leave his children, is, not wealth to support them, but *the ability to help and take care of themselves*. A young man, whose natural ingenuity is so developed by practice that he can at any moment repair a rake, adjust a scythe, fit in a new hoe-handle, set a clock in running order, sow a broken harness, make a door-latch fasten easily, set a gate in good swinging condition, sharpen a pen-knife, give edge to a pair of scissors, mend an umbrella, repair a cistern-pump, whitewash a ceiling, paper a room, stop a leaky roof, make a bee-hive, bottom a chair, and black his own boots, will pass through the world more comfortably to himself, and profitably to those around him, and be far more worthy of the hand of the finest young woman in the country, than the idle and sluggish pretended gentleman, with pockets full of cash earned by his father, and who is obliged to send for a mechanic for all these things, which he is too helpless to perform himself. Dr. Franklin said, “if you want a good servant, serve yourself;” and, “if you wish your business done, *go*; if not, *send*,” and these sayings apply with especial appropriateness to such as have those jobs to perform, commonly known as “odds and ends.”

Another important advantage afforded by such a work-shop is its *moral* influence in furnishing pleasant employment to boys during rainy or stormy weather or other leisure hours, and lessening the temptation to frequent taverns, and to attend places of diversion—often leading to the most pernicious habits.

Another, is the actual saving of expense to the farmer, in having around him ingenious boys, who will repair immediately any broken article, and save the cost of carrying it to the neighboring village, and the delay and inconveniences, often much greater, of waiting till it is mended. They will be able also to manufacture many of the simpler wooden implements required for farm use.

To keep every part of a farm and premises in the best and neatest order, cannot be accomplished unless the owner or his sons are of ready and active hands. Those who depend on hired men to perform the innumerable little services which this condition of a farm requires, will find that these services must be connected with an amount of constant observation and thought which cannot be secured by simply paying wages. It is therefore essential to educate the young managers to use their own hands, and become habituated to hand-work and thinking together; and the various operations connected with the work-shop will be found a most important auxiliary in accomplishing this very desirable result.

## STREET TREES.

No words are needed to show the beauty and refreshing appearance of fine shade trees along the streets of towns and villages. But, to secure success in all instances, more care is needed to preserve them when newly planted. To prevent the rubbing of cattle (which by the way generally

do ten-fold more mischief in streets than the value of their pasture,) some structure must be erected to shield them. After trying several modes, we find none equal to that shown in the annexed cut, (fig. 141,) neither in cheapness nor in neat appearance. It is well known to some of our readers, and consists, first, of two stout pieces of board, about five inches wide, and eight or nine feet long, which are inserted with the lower ends a foot and a half into the earth, and nearly upright or a little inclined towards the tree on each side. These are connected by four cross-boards nailed on horizontally, as shown in the figure; and the intermediate space has strips of common lath nailed on at intervals of three or four inches. These strips parallel with each other, but not quite horizontal; and being placed at opposite inclinations on the opposite sides of the structure, give a neat lattice-like appearance. The long upright pieces will be strong enough if of stout fence-boards; but would be more secure if inch-and-a-half plank. They are most easily set before the hole is

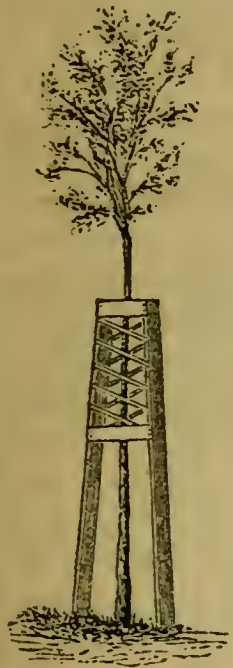


Fig. 141.

filled; but may be inserted afterwards by partially hewing them sharp, and driving them into crowbar holes. If there is any danger from sheep, the lath may be nailed on the whole space, so as to enclose the tree from top to bottom.

As street trees cannot be cultivated, they should be copiously mulched for the first few years, in a wide circle at least five or six feet in diameter. Sawdust or old tan answers a good purpose.

## HILDRETH'S GANG PLOW.

Every implement which enables the cultivator to control more completely all his operations, becomes a positive benefit. There are some kinds of work which are better executed by the gang plow, than in any other way, and hence it is occasionally of great value to every farmer. Sod ground, which has been deeply plowed late in autumn, may be reduced to a very mellow surface by the use of the gang plow, leaving the sod undisturbed below. A thin coating of yard manure, or a thick dressing of compost, may in the same way be turned under and rendered



available for corn planted on the sod. Corn stubble, plowed in fall, may be seeded very early in spring by covering the seed with this implement. There is still another use, of value to small farmers. A seed drill, costing nearly a hundred dollars, is too expensive a machine for a five-acre wheat-field—the gang, costing only twenty-five dollars, forms a useful and convenient substitute. Hildreth's

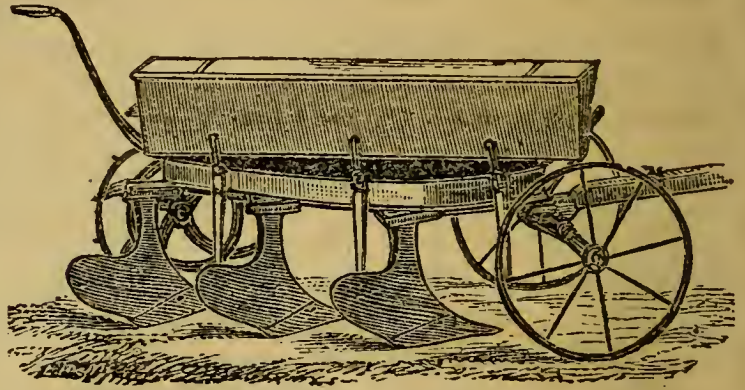


Fig. 142—HILDRETH'S GANG PLOW.

gang plow, (made by Hildreth & Charles at Lockport,) which in our own use we have found exceedingly convenient, is furnished with a seed-box, as represented in the accompanying cut, which sows any desirable quantity of seed from a peck to three bushels per acre, and the plows cover it at one operation; and in this respect it possesses an important advantage over the wheat drill, which requires complete previous preparation. Hildreth's machine is made entirely of iron except the tongue; the depth of cutting and the width of slice may be regulated with complete accuracy; and two horses plow three furrows at a time with ease, the friction from the weight of the machine and of the earth, being obviated by the wheels which sustain the plows and on which they run. It is liable to clog in wet stubble, and always performs more perfectly in clean ground.

### A CHEAP HORSE POWER.

The admirably constructed endless-chain powers of Emery, Wheeler, Pease, and others, have proved machines of great convenience to moderate farmers, who do not wish to be dependent on itinerant eight-horse power threshers, requiring several extra horses and extra hands. It is both independent and economical to be able to thresh grain within doors, in winter, or during stormy weather. The chief objection to the endless-chain power is its cost. We have lately examined

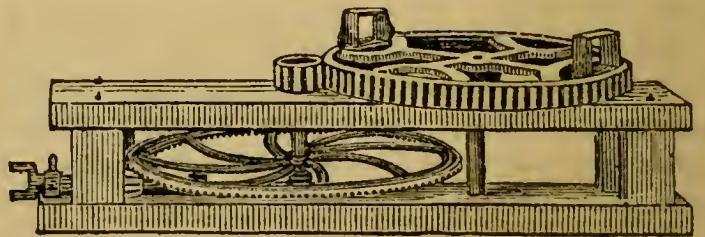


Fig. 143—HILDRETH'S HORSE POWER.

a horse-power manufactured by Hildreth & Charles of Lockport, N. Y., and furnished much cheaper, or at less than half the price of the endless-

chain powers. Fig. 143 gives a fair representation of this power, needing little further explanation. It is best secured to its place and kept solid by wedging into mortises in two logs, set in the earth, across which it is placed.

It is usually for two horses, but strong enough for four. In addition to threshing, it may be employed in sawing wood, pumping water, driving straw-cutters, cap-augers, slitting saws, for turning grindstones, or churning.

The "tumbling-rod" revolves about a hundred times in a minute—a suitable velocity for a cross-cut saw for cutting logs into stove-wood.

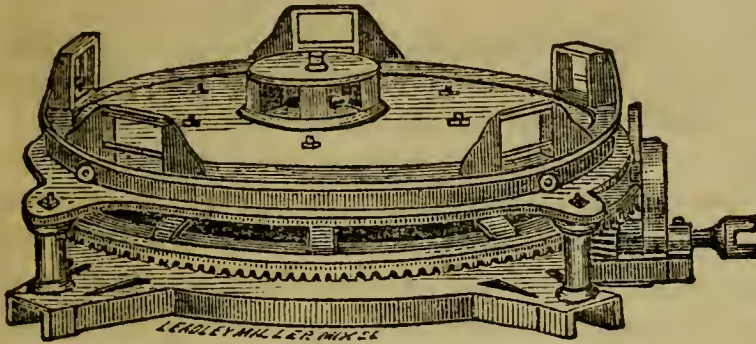


Fig. 144—HILDRETH'S HORSE POWER.

A larger, more durable horse-power, manufactured at the same establishment, is shown in fig. 144. It is wholly iron, very neat and compact, and so durable that some have been run for years without the expenditure of a dollar in repairs. The whole gearing is covered with a cap, so that the driver cannot be injured, and the wheels are protected from dust. It is adapted to eight or ten horses, and the cost is \$110.

## CUTTING GRAFTS.

There is no better time to cut grafts than at the commencement of winter. In cutting and packing them away, there are some precautions to be observed. In the first place, let them be amply and distinctly labeled, as it is very annoying to find the names gone at the moment of using them. For this purpose they should be tied up in bunches, not over two or three inches in diameter, with three bands around each bunch—at the ends and middle. The name may be written on a strip of pine board or shingle, half an inch wide, a tenth of an inch thick, and nearly as long as the scions. This, if tied up with the bunch, will keep the name secure. For convenience in quickly determining the name, there should be another strip of shingle, sharp at one end, and with the name distinctly written on the other, thrust into the bundle with the name projecting from it. If these bunches or bundles are now placed on ends in a box, with plenty of damp moss between them and over the top, they will keep in a cellar in good condition, and any sort may be selected and withdrawn without disturbing the rest, by reading the projecting label. We have never found sand, earth, sawdust, or any other packing substance, so convenient,



clean, and easily removed and replaced, as *moss*, for packing grafts. It is needful, however, to keep an occasional eye to them, to see that the proper degree of moisture is maintained—which should be just enough (and *not a particle more*,) to keep them from shrivelling. They must, of course, be secure from *mice*.

Plum grafts, which are sometimes injured by intense cold, are generally better if cut before the approach of the severest weather, and securely packed away.

---

COMPOST FOR GARDENS.—*Principal ingredients*—Stable manure, more or less, and turf from fence corners; these laid in alternate layers, a few inches thick, and occasionally added as other materials increase. *Auxiliary ingredients*—Weeds, litter, rakings of leaves, potato tops, wood and coal ashes, soapsuds, dish-water, refuse hair, dust from house sweeping, chicken and fish bones, gutter scrapings, and nearly every thing else that would be “dirt” elsewhere. Rotted a year in a heap, and these ingredients will form a valuable compost, to the benefit and neatness of the premises.

APPLES FOR DOMESTIC ANIMALS.—Sweet apples are of great value in feeding almost any kind of farm animals. Hogs fatten rapidly on them, as well as on those that are acid. Cows, fed moderately at the start, on well cracked or cut apples to prevent choking, will increase in milk and improve in condition. Apples form an excellent succulent food for horses in winter. Varieties should be specially sought for feeding animals, combining hardiness, thriftiness, and great bearing qualities. Among the best now known are Corlies’ Sweet, Pumpkin Sweet, and Haskell Sweet for autumn—and Green Sweet for long keeping. At the west, the Hightop or Summer Sweet is the best early sort, and the Sweet Pearmain and Sweet Romanite for autumn and winter.

PRODUCTIVE APPLE TREES.—For early, and great and continued bearing, the *Baldwin* will probably stand first—five or six-year trees often affording three or four bushels of fruit, and old trees sometimes yielding forty or fifty bushels. Next to the *Baldwin*, stands the *Jonathan*—a most excellent and very handsome apple, but rather small in size. The *Rhode Island Greening*, and *Tompkins County King*, are also great bearers, but do not give such early crops as the *Baldwin* or *Jonathan*.

DRAINING ORCHARDS.—It is best to place underdrains *between* the rows of trees—because, first, the large roots sometimes run down and injure or derange the channel; and secondly, because it is the space between the rows that is covered by the great mass of small fibrous roots, which furnish the nutriment to them. As dwarf pears do not send roots so far nor so deep, they may be set directly over the drain if desired.

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or, NEW-ROCHELLE, N. Y.

In the Transactions of the *New-York American Institute*, published annually by the State of New-York, at a meeting of the Farmer's Club, held on the 2d of August, 1854, Judge Van Wyck offered the following resolution, which was unanimously adopted:

"Resolved, That the Farmers' Club of the American Institute highly approves of the efforts made by WILLIAM LAWTON, Esq., of New-Rochelle, to cultivate, improve and spread that most valuable blackberry, spoken of to-day, and that he has presented to this Club at different periods, both this season and the last, most liberal specimens of this blackberry, so that every member could not only gratify his sight but his palate, with eating as many as he pleased, and thus be qualified to judge in every stage and season of their growth, their superior qualities as regards size, flavor, and succulency: and that we do hereby earnestly and decidedly recommend the LAWTON BLACKBERRY, AS THE CLUB HAS CORRECTLY NAMED IT, to public notice and patronage."

*At the Fifth Meeting of the Am. Pom. Society, held in Boston, in Sept., 1854.*

Mr. CABOT of Massachusetts:—"I wish to inquire about *Lawton's New-Rochelle Blackberry*."

Rev. WILLIAM CLIFT of Stonington, Conn.:—"The *Lawton Blackberry* has fruited with me for the first time this season; it fulfills all its promises, WHICH IS ALL THAT NEED BE SAID OF IT. Coming just after raspberries, it prolongs the season of small fruits a month or more, and it is a great acquisition. It deserves a place in every garden."

Mr. PINE of New-York:—"It is the most remarkable acquisition: very sweet and delicious indeed, and the hardiest plant possible."

Mr. MAURICE of New-York:—"It is very large, tender and delicious. I think it the greatest acquisition we have had."

Mr. CLARK of Connecticut:—"I never saw anything more productive."

Mr. SAUL of New-York:—"I can corroborate what others have said."

Mr. PRINCE of New-York:—"It is a most remarkable acquisition of the blackberry kind, very sweet and delicious indeed; a great bearer, and the hardiest plant possible."

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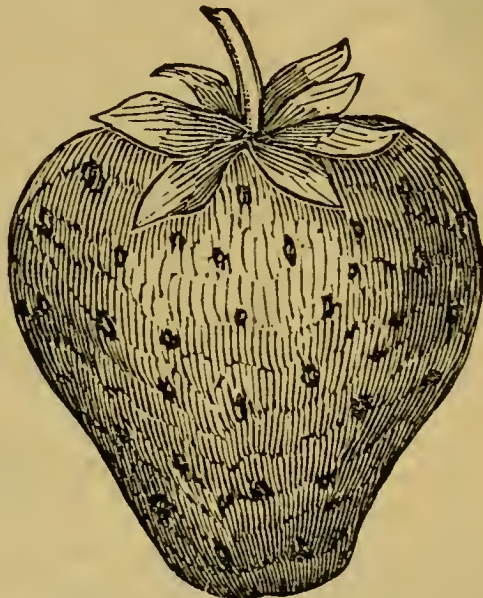
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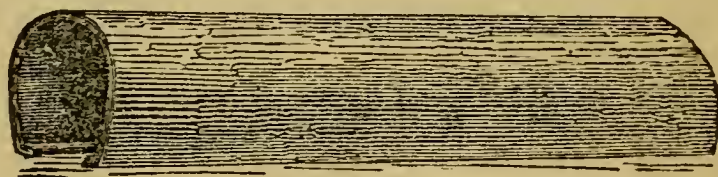
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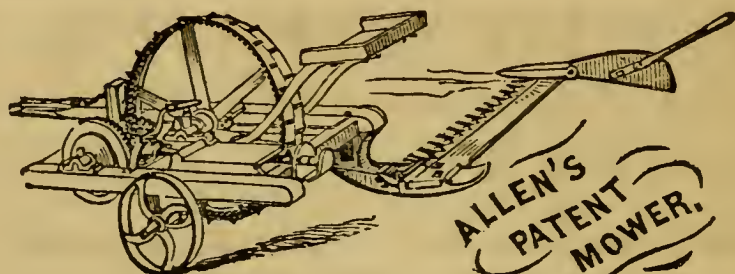
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Strong, simple in construction, not liable to get out of order, compact, light, easy of draught, is perfectly safe for the driver, and may be worked with a slow gait by horses or oxen. No clogging of knives; works well on any ground, however rough—side-hills, salt and fresh meadows, &c., and in any kind of lodged grass and clover.

**Warranted to give entire satisfaction.**

**FIELD AND GARDEN SEEDS, FRUIT & ORNAMENTAL TREES.**

**FERTILIZERS.**

Peruvian Guano, Bone Dust, Superphosphate of Lime, Plaster, Poudrette, &c.

**DRIED BLOOD AND WOOL MANURE,**

**F**ULLY equal to the best Peruvian Guano, and at half the price. For many crops, especially wheat and roots, and also as a change in manures, it is better than Guano. Potatoes raised with it have produced more abundantly than where Peruvian Guano was used, and they are now bringing one shilling more per basket in the New-York market. Price \$30 per ton of 2000 lbs., in barrels of 200 lbs. each.

**R. L. ALLEN,**

189 & 191 WATER STREET, NEW-YORK.

**POTATO DIGGER.**

**T**HIS is a new and highly improved Implement, got up after *long experience of working it in the field.* It is by far the best thing of the kind in use. One man and a pair of horses will dig faster than twenty men can pick up. It throws all the potatoes, (even the smallest,) upon the surface of the ground, and leaves them clear of dirt.

**COLEMAN'S LATEST IMPROVED FARM GRAIN MILL,  
TO WORK BY HORSE OR STEAM POWER.**

The most efficient, simple, and durable Metallic Mill now in use, for grinding wheat and rye into fine family flour, oats, and corn, (shelled or on the cob.) It occupies a space of only three feet square, and weighs about 250 pounds. Price, with seive for corn mill, \$50; with bolt for family flour, \$75.

**HORSE POWERS, THRESHERS and FAN MILLS of every description.**

**R. L. ALLEN,**

189 & 191 WATER STREET, NEW-YORK.

# NATIONAL AGRICULTURAL IMPLEMENT WAREHOUSE.

**TREDWELL & PELL,**

(Successors to TREDWELL & JONES,)

**NO. 251 PEARL-ST., NEW-YORK CITY,**

MANUFACTURERS, IMPORTERS AND DEALERS IN

**Agricultural and Horticultural  
IMPLEMENTS AND MACHINERY,  
Field and Garden Seeds, Fertilizers, &c.**

**A** COMPLETE assortment of the most desirable articles in this line, for Farming and Gardening purposes, always on hand. Implements and Machinery manufactured to order, at short notice.

**ALFRED M. TREDWELL.**

**OGDEN P. PELL.**

## PURE BRED FANCY POULTRY.

**T**HE subscriber would call the attention of those wishing the *best reliable Breeds of Fancy Poultry* to his stock, which consists in part of

**SPANISH, DORKINGS, POLANDS, GAMES, BANTAMS, &c., &c.**

I can usually spare a few *pairs or trios* of each breed, in *August, September, and October, every year*, and will furnish each spring,

**FRESH EGGS FOR SETTING,**

*Safely packed in cotton in double boxes.* I can at times furnish through friends,

**WHITE TOPKNOT DUCKS, COMMON AND LOP-EARED RABBITS,**

ALSO

**ENGLISH RAT TERRIERS, (Black and Tan.)**

All stock furnished by me, *warranted true to breed.*

All postpaid inquiries answered with pleasure.

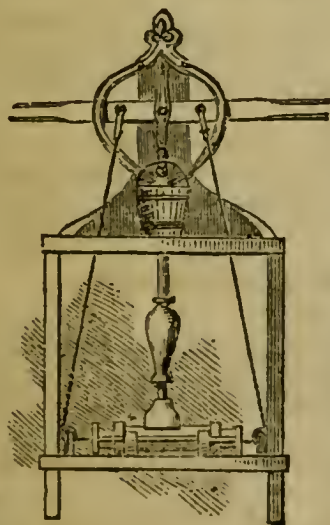
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**E. S. RALPH,**

Box 21 P. O., BUFFALO, N. Y.

P. S. The attention of Southern, Western, and Canada customers is called to the *unrivalled facilities for shipment* from Buffalo, either by Boat, Railroad, or Express.

## "THE WONDERFUL PUMP."



**A**S may be seen, this Pump works by Lever Power, and stands in the water. It is a

**Double-Acting, Horizontal Force Pump,**

Raising from 10 to 30 gallons per minute, and *warranted* to raise water by hand at all depths under 150 feet, or the money will be *refunded*. Rods extend from the Lever to the Chains which pass under two Pullies at each end of the Pump, and fasten to the Pistons. Thus it will be seen that by pulling either Lever down, the opposite end of the Piston is drawn out, and *vice versa*, making the whole operation simple, natural and powerful. The water passes up through the Air-chamber and Center Pipe, which are made either of wrought-iron, rubber or lead. Prices from \$18 to \$80, for all depths. Address, for full particulars,

**JAMES M. EDNEY,**

147 CHAMBERS STREET, NEW-YORK.

☞ Also the best GARDEN ENGINES for \$20.



# Choice Seeds, Trees, Plants, &c.

**T**HE subscribers respectfully invite the attention of Dealers, Amateurs and Cultivators generally, to their unrivalled stock of the above articles, which they offer at Wholesale or Retail. In order to meet the annually increasing demand for Seeds, &c., they have made large additions to their general stock, and it now comprises one of the largest and most varied assortments in the country.

They would remind purchasers of Seeds, that a large portion of the staple kinds they offer have been raised by themselves and other experienced seed-growers, expressly for them, and therefore they can with the utmost confidence, recommend the Seed they sell to be of the most reliable character.

Particular attention has been given to the stock of

## Agricultural and Garden Seeds,

Which embraces all the leading and most approved kinds, among which are many new and improved varieties of Peas, Beans, Beets, Cabbages, Celery, Lettuce, Melons, Squashes, Radishes, Turnips, &c., highly recommended.

## FLOWER SEEDS.

In this department of our trade, no pains has been spared to make the collection the most perfect and complete. The list now numbers nearly one thousand species and varieties, comprising everything new, choice and rare. They would particularly ask the attention of purchasers to their assortments of

*SPLENDID FRENCH AND GERMAN ASTERS,*  
*DOUBLE CAMELLIA-FLOWERED BALSAMS,*  
*DOUBLE STOCKS, LARGE PANSIES,*  
*SUPERB DOUBLE HOLLYHOCKS,*  
*CARNATIONS, PICOTEEES, &c., &c.,*

which are of their own growing, and are unequalled by any imported Seed. Also to the *extra fine Cineraria, Calceolaria, Geranium, &c., &c.,* selected from Prize Collections, with many other choice kinds received direct from the most eminent Florists in Europe.

## FLOWER SEEDS BY MAIL.

The following Assortments of Flower Seeds are sent by Mail, free of postage, to purchasers, at the prices annexed :

- No. 1—Assortment containing twenty packets of the most showy and favorite Annuals,..... \$1.00  
No. 2—Assortment containing twenty packets of fine Biennials and Perennials, 1.00  
No. 3—Assortment containing ten packets of choice and new varieties, including Extra Double French Asters, Finest Double Stocks, Pansies, Verbenas, &c.,..... 1.00  
No. 4—Assortment containing five packets of choice Seeds for Parlor and Greenhouse Flowers, including extra Calceolaria, Cineraria, Chinese Primrose, Geranium, &c., from the best collections,..... 1.00

The above four Assortments will be sent to one address, free of postage, for \$3.00.

## BULBOUS FLOWER ROOTS.

A large and select assortment imported annually from one of the most celebrated Florists in Holland, which consists of the finest Hyacinths, Tulips, Narcissus, Crocus, Crown Imperials, &c. Also, from their own grounds, a rare collection of beautiful Japan Lillies and Gladiolus.

## FRUIT AND ORNAMENTAL TREES.

Their NURSERIES at Cambridge, two miles from Boston, are stocked with an immense collection of Fruit and Ornamental Trees, embracing every desirable variety of Pear, Apple, Plum, Peach, &c. (300 varieties of Pears alone may be seen in fruit on the Specimen trees, during the season of fruiting.) The most extensive assortments of Strawberries, Currants, Gooseberries, Raspberries, &c., are cultivated.

## GRAPEVINES.

Rebecca, Delaware, Concord, Golden Hamburg, Bowood Muscat, Lady Downes, and a very large variety of Foreign Grapes, grown especially for Vineries.

The collections of NEW AND RARE PLANTS are very extensive.

Catalogues of all will be furnished gratis on application.

Orders must be accompanied with the Cash or a satisfactory reference.

**HOVEY & CO.,**

NO. 7 MERCHANTS' ROW, BOSTON.

# FLOWER SEEDS! FLOWER SEEDS!!

OF SUPERIOR QUALITY.

**B. K. BLISS, Seedsman and Florist,**  
*SPRINGFIELD, MASS.,*

**W**OULD respectfully invite the attention of those interested in the cultivation of Flowers, to his extensive and well selected assortment of the above, comprising every desirable variety in cultivation, of both Foreign and Home growth. His new Descriptive Catalogue for 1859 will be published in January, and will contain all the novelties of the season, with many rare and choice seeds, and a total of upwards of

## **Eight Hundred Varieties of Flower Seeds.**

Of each of which a complete description is given, by means of a tabular arrangement, admirably adapted for referential convenience, with explicit directions for their culture. He would invite particular attention to his choice collection of

*FRENCH AND GERMAN ASTERS,      DOUBLE HOLLYHOCKS,*  
*CARNATION AND PICOTEE PINKS,      DOUBLE BALSAMS,*  
*CALCEOLARIAS,      CINERARIAS,      ENGLISH PANSIES,*  
*GERMAN STOCKS,      COCKSCOMBS,      CHINESE PRIMROSE, &c.,*

Received direct from the parties who grow the plants for the English and Continental Exhibitions, by which he is enabled to insure to purchasers pure and genuine seeds of the best sorts in cultivation, raised from prize flowers only.

## **FLOWER SEEDS BY MAIL.**

For the accommodation of those who love the cultivation of Flowers, but who reside at a distance from where they can be procured, he has selected from his large assortment of Flower Seeds, the most showy varieties, and those of easy culture, and put them up in assortments, which will be sent, postpaid, to any address in the Union, at the following prices :

<b>ASSORTMENT No. 1</b> —consists of twenty choice varieties of Annuals,.....	<b>\$1.00</b>
<b>No. 2</b> —consists of twenty choice varieties of Biennials and Perennials,.....	<b>1.00</b>
<b>No. 3</b> —consists of ten extra fine varieties of Annuals and Perennials, embracing many of the new and choicest in cultivation, .....	<b>1.00</b>
<b>No. 4</b> —consists of five very choice varieties, selected from Prize Flowers of English Pansies, German, Carnation and Picotee Pinks, Verbenas, Trutnant's French Asters and Double Hollyhocks, each of which are sold for 25c. singly, .....	<b>1.00</b>

Persons in ordering will please give the number of the Assortment. Any person remitting **THREE DOLLARS** WILL RECEIVE THE FOUR ASSORTMENTS, POSTAGE FREE.

The above assortments have been sent out for the past five years, and have had a thorough trial in every section of the country. Those who have given them a trial recommend them freely to their friends, and the most flattering testimonials of their good quality are daily received.

The following additional assortments will be sent, **FREE OF POSTAGE**, at the prices annexed :

<b>ASSORTMENT No. 5</b> —contains fifteen very select varieties of Green-House Seeds, .....	<b>\$3.00</b>
<b>No. 6</b> —contains one hundred varieties of Annuals, Biennials and Perennials, including many new and choice varieties, ...	<b>5.00</b>
<b>No. 7</b> —contains fifty varieties of Annuals, Biennials and Perennials,.....	<b>2.50</b>
<b>No. 8</b> —contains twenty varieties of hardy Annuals, Biennials and Perennials, for sowing in the autumn, .....	<b>1.00</b>

The seeds contained in all of the assortments are of his selection. Purchasers who prefer to make their own selections from the Catalogue, will be entitled to a discount proportionate to the quantity ordered.

All orders must be accompanied with the cash. Remittances can be made by mail in current bank bills or postage stamps.

N. B. Catalogues forwarded to any address in the Union on receipt of a three-cent postage stamp. Address

**B. K. BLISS,**

*SPRINGFIELD, MASS.*



# ROCHESTER COMMERCIAL NURSERIES.

**T**HE stock of Trees and Plants now offered for sale by the subscribers, will be found unsurpassed by any in the market, either in the health and vigor or size and beauty of the tree, or the correctness of every variety to name.

We spare no pains or expense in adding to our collection such new varieties as give promise of being valuable.

Among the items which we cultivate in large quantities, are the following.

## STANDARD FRUIT TREES FOR ORCHARDS.

APPLES, PEARS, CHERRIES,  
PEACHES, PLUMS, APRICOTS,  
NECTARINES, QUINCES, &c., &c.

## DWARF FRUIT TREES FOR GARDENS.

APPLES, PEARS, CHERRIES.

**GRAPEVINES**—All the hardy Native and Foreign sorts.

## SMALL FRUITS.

CURRANTS, STRAWBERRIES, GOOSEBERRIES,  
RASPBERRIES, BLACKBERRIES, &c., &c.

**RHUBARB, ASPARAGUS, &c.**

## ORNAMENTAL DEPARTMENT.

DECIDUOUS ORNAMENTAL TREES.  
EVERGREENS of all the best varieties.  
HARDY ORNAMENTAL SHRUBS.  
ROSES.  
HEDGE PLANTS.  
AMERICAN ARBORVITÆ, beautiful plants, low.

## STOCKS FOR NURSERYMEN,

Including a full supply of ANGERS and FONTENAY QUINCE STOCKS.

## THE HOOKER STRAWBERRY

Originated on our grounds, and can now be furnished in large quantities at low rates.

The experience of several years has proved this to be, all things considered, far the best known variety. The flowers are perfect. The fruit is very large and beautiful, and quite superior in quality to any other productive sort. The plant is very vigorous, hardy, and extremely productive, thus combining more excellences than any other variety. It is an assortment in itself, and indispensable to all good gardens.

**H. E. HOOKER & CO.,**

ROCHESTER, N. Y.

## REBECCA GRAPEVINES,

### FOR SALE AT REDUCED PRICES.

**T**WO-YEAR-OLD VINES, strong plants, \$20.00 per dozen—\$150 per 100.

One-year-old vines, strong plants, 12.00 " 80 "

DIANA—2-year-old vines, strong plants, \$9.00 per dozen.

" 1-year-old vines, strong plants, 6.00 "

CONCORD—2-year-old vines, strong plants, \$9.00 per dozen.

" 1-year-old vines, strong plants, 6.00 "

DELAWARE—1-year-old vines, good plants, \$3.00 each.

ISABELLA—3-year-old vines, \$18.00 per 100.

" 2-year-old vines, 12.00 "

CATAWBA—3-year old vines, \$18.00 per 100.

" 2-year-old vines, 12.00 "


## STRAWBERRY PLANTS,

Of the most approved varieties, including *Prince's Imperial*, *Scarlet*, *Primate*, *Magnate*, (the largest of all); also *Wilson's Albany*—price \$2.00 per 100.

LINNÆUS RHUBARB, per Dozen, \$2.00—per Hundred, \$10.00.

Also a general assortment of *Fruit Trees*, *Evergreens*, &c.

I beg leave to call the attention of those wishing to purchase Rebecca Grapevines, as I have the largest stock and the strongest vines of any one.

 Terms positively Cash **WILLIAM BROCKSBANK,**  
PROSPECT HILL NURSERY, HUDSON, COLUMBIA CO., N. Y.

# FRUIT AND ORNAMENTAL TREES.

**ELLWANGER & BARRY** solicit the attention of Planters, Nurserymen, and Dealers in Trees to their present stock, which has never been equalled in extent, nor surpassed in vigor, health, and beauty of growth. In its propagation and culture, the utmost care has been taken to insure accuracy.

## FRUIT TREES.

**APPLES** on free stock for orchards, 2 to 4 yrs. from bud and graft—do. on Paradise and Doucain stock for gardens, 2 to 3 years.

**PEARS** on Pear stock, 2 to 3 yrs. from bud—do. on Quince stock, 2 yrs. from bud—do. on Quince stock, 3 to 4 yrs., with fruit buds.

**CHERRIES** on Mazzard stocks, 2 yrs. fr'm bud—do. on Mahaleb stocks, 2 yrs. fr'm bud. **QUINCES**—Orange, Portugal, and Rea's Seedling, a superb new variety.

**ENGLISH FILBERTS**—**SPANISH CHESTNUTS.**

**GRAPES**—Hardy, all the most valuable new and old sorts—do., Foreign, for culture under glass, strong well-ripened plants in pots, of all the best varieties.

**STRAWBERRIES**—all the best sorts in cultivation, new and old, at the lowest rates.

**BLACKBERRIES**—New-Rochelle, or Lawton, and Dorchester, (the largest stock in existence.)

**RASPBERRIES**—a general collection, including those fine new ever-bearing sorts, "*Belle de Fontenay*" and "*Merveille de quatre Saisons*."

**GOOSEBERRIES**—the best English sorts, and an immense stock of the *American Seedling* that bears most profusely and never mildews.

**CURRENTS**—White Grape, Cherry, Victoria, Black Naples, and many other old and new sorts.

**RHUBARB**—including Linnæus, Prince Albert, Giant, Victoria, and many others.

## ORNAMENTAL TREES.

The stock is immense, covering 90 acres of land closely planted, all well grown and in perfect health and vigor. Nurserymen, Dealers, Landscape Gardeners, &c., will be supplied on terms that cannot fail to please, as the stock must be reduced.

**DECIDUOUS TREES**—Elms, Maples, Cypress, Catalpas, Horse Chestnuts, Larch, Laburnums, Lindens, Magnolias, Mountain Ash, Tulip Trees, Salisburia, Poplars, Thorns, &c., &c., of all sizes.

**WEeping TREES**—Ash, Birch, Elm, Linden, Mountain Ash, Poplar, Thorn, Willow, including the American and Kilmarnock.

**EVERGREEN TREES**—Arbor Vitæ, (American, Siberian and Chinese,) Red Cedar, Common Juniper, Balsam Fir, European Silver Fir, Norway Spruce, Red American Spruce, African or Silver Cedar, Japan Cedar (Cryptomeria,) Pines, (Austrian, Scotch, Benthomiana, &c.,) Yew (English and Irish,) Tree Box, Mahonia, Washington, or "Big Tree" of California, and many other California Evergreens.

**FLOWERING SHRUBS**—including all the finest new varieties of Althea, Calycanthus, Flowering Currant, Deutzia, Loniceras, Lilacs, Spiræa, Syringas, Viburnums, Wiegels, &c., &c.

**CLIMBING SHRUBS**—such as Honeysuckles, Bignonias, Aristolochia (Pipe vine,) Clematis, Ivy, &c.

**ROSES, Pæonies, Dahlias, Phloxes,** and other hardy border perennial plants.

**BULBOUS AND TUBEROUS ROOTS,** viz :—Hyacinths, Tulips, Crocus, Narcissus, Dahlias, Pæonies, &c., &c.

## STOCKS FOR NURSERYMEN.

**PEAR SEEDLINGS,** 2 years, (1 year transplanted, fine,)—do. do. 1 year from seed bed.

**MAZZARD CHERRY,** 1 year, very strong.

**MAHALEB CHERRY,** 2 years, (1 year transplanted, fine,)—do. do. 1 yr. from seed bed.

**QUINCE STOCKS,** Angers and Fontenay, 1 year from cuttings.

**MANETTI ROSE stocks**—**CONWELL WILLOW** for the Weeping sorts.

All who are interested are respectfully invited to examine the stock and prices. The following Catalogues are sent gratis prepaid, to all who apply and enclose one stamp for each :

No. 1. Descriptive Catalogue of Fruits—No. 2. Descriptive Catalogue of Ornamental Trees, &c.—No. 3. Descriptive Catalogue of Green-House and Bedding-Out plants—No. 4. Wholesale or Trade List.

**ELLWANGER & BARRY,**

MOUNT HOPE NURSERIES, ROCHESTER, N. Y.



## THOMAS & HERENDEEN'S NURSERIES.

**THOMAS & HERENDEEN** (formerly J. J. THOMAS,) offer for sale at their nurseries at Macedon, Wayne Co., N. Y., a very extensive collection of

APPLES—consisting of about forty of the finest select varieties ;  
PEACHES—affording a succession of the best sorts for two months ;  
CHERRIES—comprising all the well-proved and valuable new kinds ;  
PEARS—Dwarfs and Standards, the best chosen varieties ;  
PLUMS—containing a full list of approved sorts ;

besides an ample supply of *Raspberries*, *Gooseberries*, *Currants*, *Strawberries*, and the smaller fruits generally.

Their trees are not only of vigorous, handsome, and healthy growth, but are propagated with great care to insure accuracy, and exclusively of such sorts as have been amply proved by fruiting—their list of Apples alone being selected from specimen orchards of several hundred varieties in bearing.

Their ORNAMENTAL DEPARTMENT contains the best

### HARDY IMPORTED AND AMERICAN EVERGREENS,

Ornamental Trees, Shrubs, and Herbaceous Flowering Plants, &c.

All orders must be addressed to *Thomas & Herenden, Macedon, Wayne Co., N. Y.*; or if for STANDARD PEARS, to *J. J. Thomas, Union Springs, Cayuga Co., N. Y.*, will meet with careful and prompt attention, and packing will be performed in the most secure manner for safe conveyance to any part of the continent. In all cases where desired, selections will be made with scrupulous care by the proprietors.

## DETROIT, MICHIGAN.

**WM. ADAIR** (as above,) keeps constantly on hand a general assortment of the best and most popular varieties of *Fruit and Ornamental Trees*, *Flowering Shrubs*, *Roses*, *Hardy and Green-House Plants*.

### CONCORD, REBECCA, DIANA AND DELAWARE GRAPEVINES.

The first three can be supplied by the Dozen or Hundred.

### RASPBERRIES, BLACKBERRIES, AND STRAWBERRIES,

Including *Brinckle's Orange*, *Allen's*, *New-Rochelle*, *Wilson's Albany*, *Hooker*, *Pea-body's*, &c.

Particular attention is invited to the large and well-grown stock of *Pear Trees*, (both Standard and Dwarf,) *Hardy Evergreen Trees*, *Roses*, *Dahlias* and *Verbenas*.

Address

**WILLIAM ADAIR,**

DETROIT, MICH.

## OLD ROCHESTER NURSERIES,

ROCHESTER, N. Y.

**S. MOULSON** offers for sale an extensive collection of Fruit and Ornamental Trees, embracing *Apples*, Standard and Dwarf, *Pears*, Standard and Dwarf; *Cherries*, Standard and Dwarf; *Peaches*, *Plums*, *Grapes* (Native and Foreign,) *Currants*, *Gooseberries*, *Strawberries*, *Raspberries*, *Chestnuts*, *Walnuts*, and *Filberts*; and in the Ornamental Department will be found *Evergreen Trees* of American growth, from the seed; *Roses* in many varieties, of the hardy classes; *Flowering Shrubs* and *Bulbs*; *Hedge Plants*; also STOCKS FOR NURSERYMEN.

Catalogues of varieties, with prices affixed, can be obtained by all applicants who forward a stamp for prepayment.

## NEW VERBENAS, HOLLYHOCKS, DAHLIAS, CARNATIONS, PICOTEEES, PINKS, PETUNIAS, &c.

**THE** subscriber is happy to inform his friends and patrons that he has received from England during the past season, a large addition to his assortment of the above—embracing all the newest and best varieties in cultivation, which will be offered for sale in April.

A new Descriptive Catalogue will be published the first of April, and forwarded to all applicants on receipt of a postage stamp. Address

**B. K. BLISS,**

SPRINGFIELD, MASS.

# FRUIT AND ORNAMENTAL TREES, SHRUBS, ROSES, VINES, AND EXOTIC PLANTS.

**PARSONS & CO.,** FLUSHING, near New-York, invite attention to their fine stock of **HARDY AND EXOTIC TREES AND PLANTS**, constantly enriched by their collectors in America, and by importations from abroad.

Their **EXOTIC DEPARTMENT**, occupying a number of houses, is full of rare and valuable Plants, and is worthy the inspection of visitors. The varieties of *Exotic Grapes* are kept genuine by constant propagation from fruit-bearing vines, to which two houses are devoted.

Their **ROSE DEPARTMENT** contains a large assortment of all the finest varieties, and the best Standard sorts are cultivated in very large quantities, and sold at reduced rates for massing and dealers. They do not bud their Roses, and cannot therefore sell them to compete with those who have adopted that mode of cultivation. No stock upon which to bud has yet been found, that will not sucker up and destroy the variety worked upon it.

In the **OPEN GROUND DEPARTMENT**, they offer a large stock of well-grown and thrifty *Fruit Trees*, suitable either for the Amateur or the Dealer, including the finest kinds of *Standard and Dwarf Pears, Cherries, Plums, Peaches, Apples, &c.* These are now offered at reduced prices.

In the **HARDY ORNAMENTAL DEPARTMENT** will be found a large quantity and variety of *Deciduous and Evergreen Trees and Shrubs*, for the Avenue, Lawn, or Garden. Of these some fine varieties are cultivated in very large quantities, and sold at a great reduction from the usual rates. Among them are *Spiræas, Lilacs, Forsythias, Weigeleas, Stuartias, Andromedas, Pyrus japonica, Norway Spruce, Deciduous Cypress, Larch, Ash, Maple, Beech, Linden*, and others.

They have made the **RHODODENDRON** a speciality, and have cultivated it in such large quantities that they can offer it at greatly reduced rates. The beauty and richness of the foliage and flowers of this valuable shrub cannot be too highly appreciated.

A new feature of their establishment is the extensive propagation of the **RARE EVERGREENS**, the cost of importing which has hitherto placed them beyond the reach of any but the wealthy. They can thus offer at moderate rates, the fine sorts, as *Podocarpus, Retinospermum, Cephalotaxus, Thujiopsis, Taxus erecta*, and others.

For **HEDGES**, they would call attention to the *Siberian Arbor Vitæ*, which is far more valuable than the *American*, in that it bears transplanting well, is very close and compact in its habit, requires no trimming, and is not affected by the coldest winter.

A general or trade Catalogue will be sent on application. Careful attention is given to packing and forwarding.

## DUTCH BULBOUS ROOTS FOR FALL PLANTING.

**THE** subscriber will receive early in September, a large and well-selected assortment of the above direct from Holland, consisting of the finest varieties of

**DOUBLE AND SINGLE HYACINTHS, TULIPS,  
POLYANTHUS NARCISSUS, CROWN IMPERIALS,  
JONQUILS, SNOWDROPS, CROCUS, &c., &c.,**

Catalogues of which will be sent to all applicants enclosing a stamp. For the convenience of those who desire a fine collection, but are unacquainted with the varieties, he has put them up in Collections as follows, with full directions for culture :

### Collection No. 1—Price \$10—Contains

- 20 DOUBLE and SINGLE HYACINTHS, (all named flowers,) suitable for Parlor culture in pots or glasses, or for the Flower Border.
- 20 DOUBLE and SINGLE HYACINTHS, for the Flower Border only.
- 20 EARLY TULIPS, for Pot culture or open Border.
- 20 LATE TULIPS, for the Border only.
- 6 POLYANTHUS NARCISSUS, for Pot culture or Border.
- 6 DOUBLE ROMAN NARCISSUS, very fragrant.
- 12 DOUBLE JONQUILS
- 100 FINEST MIXED CROCUS.
- 2 strong plants of the new and splendid Chinese Plant, *DIELYTRA SPECTABILIS*.
- 4 PEONIES, distinct varieties, and very fine.

### Collection No. 2—Price \$5—Contains

One-half of each of the above-named varieties, with the exception of the *Dielytra* and *Peonies*. All orders must be accompanied with cash or a satisfactory reference.

Address

**B. K. BLISS,**

SPRINGFIELD, MASS.



## ALBANY NURSERY.

**JOHN WILSON**, of the ALBANY NURSERY, would call the attention of all those intending to purchase Trees, Plants, &c., to his stock of

### FRUIT AND ORNAMENTAL TREES,

Shrubs, Roses, Grapevines, Currants, Gooseberries, Raspberries and other hardy plants; and also of Greenhouse Plants, of which he has a great assortment; and to his stock of Bedding-out Plants, suitable for spring planting, embracing *Verbenas* of the newest and most showy varieties; *Dahlias*, a great and superb collection; *Pansies*, *Daisies*, *Geraniums*, *Petunias*, *Heliotropes*, *Fuchsias*, &c., &c., all of which he is prepared to sell on as reasonable terms as any other establishment.

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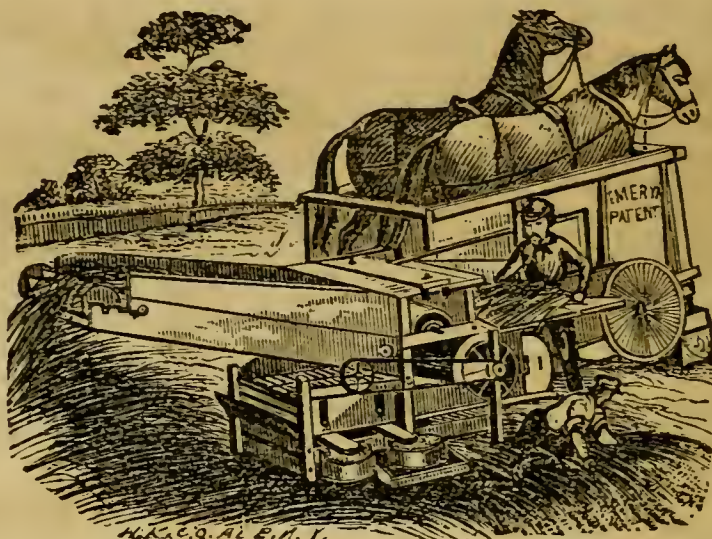
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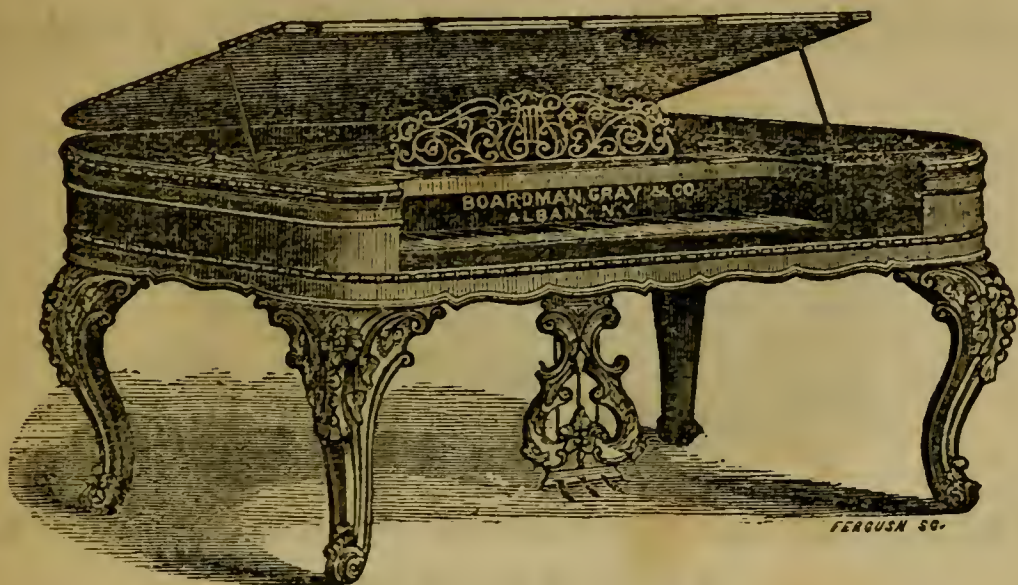
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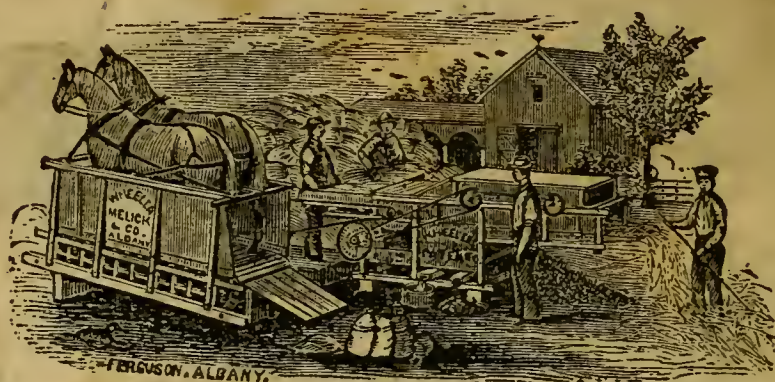
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